DECEMBER 8, 1997 VOLUME 14, NUMBER 49

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

REVIEW

IIS 4.0

Microsoft reaches a new plateau.

Page 58.

Stall tactics

A telecom case study: SBC illustrates how RBOCs are thwarting competition.

By Marc Ferranti

On May 6, 1996, a fiber-optic terminal belonging to MFS Communications Company, Inc. but located in a Pacific Bell facility suffered a three-hour outage. The cause? It was installed on an otherwise empty floor that Pacific Bell employees had been using during their breaks, often leaving the windows open. Birds flew in and nested in the equipment. Their excrement seeped in and corroded the terminal's casing, ultimately causing the failure.

See Stall tactics, *page 49*

Java roadmap tough to follow

By Chris Nerney
New York

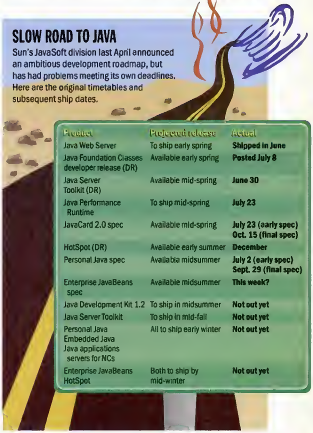
Last April, amid much optimism and hype, Sun Microsystems, Inc. unveiled a Java product roadmap for 1997.

The ambitious blueprint now haunts Sun's JavaSoft unit, whose engineers are several months behind schedule on a number of projects.

JavaSoft plans to announce a new roadmap for its developers' kit this Wednesday at Internet World.

The delays have prompted

See Sun, *page 72*



SLOW ROAD TO JAVA

Sun's JavaSoft division last April announced an ambitious development roadmap, but has had problems meeting its own deadlines. Here are the original timetables and subsequent ship dates.

Product	Projected release	Actual
Java Web Server	To ship early spring	**Shipped in June**
Java Foundation Classes developer release (DR)	Available early spring	**Posted July 8**
Java Server Toolkit (DR)	Available mid-spring	**June 30**
Java Performance Runtime	To ship mid-spring	**July 23**
JavaCard 2.0 spec	Available mid-spring	**July 23 (early spec) Oct. 15 (final spec)**
HotSpot (DR)	Available early summer	**December**
Personal Java spec	Available midsummer	**July 2 (early spec) Sept. 29 (final spec)**
Enterprise JavaBeans spec	Available midsummer	**This week?**
Java Development Kit 1.2	To ship in midsummer	**Not out yet**
Java Server Toolkit	To ship in mid-fall	**Not out yet**
Personal Java Embedded Java Java applications servers for NCs	All to ship early winter	**Not out yet**
Enterprise JavaBeans HotSpot	Both to ship by mid-winter	**Not out yet**

Internet World news:

- **See our show preview.**
- **Read about Novell's pledge of allegiance to Java.**

PAGE 12

Bum spam rap rocks Pegasus

User mail lost in space after false accusation.

By Paul McNamara

Pegasus Mail is to spamming what Richard Jewel was to the Olympic Park bombing: falsely accused but battered nonetheless.

A popular freeware e-mail client authored by New Zealander David Harris, the Pegasus software erroneously was pegged as being a spam tool in a bulletin issued Oct. 20 by the Department of Energy's Computer Incident Advisory Capability (CIAC). The bulletin suggested that its readers, which include Internet service providers and Internet organizations, consider

See Pegasus, *page 71*

More online • Spam-fighting tips • CIAC advisory www.nwfusion.com

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In-Site

AppleTalk snafu tests Cabletron

By Robin Schreier Hohman
Bethesda, Md.

For the National Institutes of Health (NIH), virtual LANs seemed like the perfect solution to a complex problem.

The NIH, one of the world's foremost biomedical research centers, thought VLANs would

See NIH, *page 71*

Intel on thin clients: If you can't beat 'em, join 'em

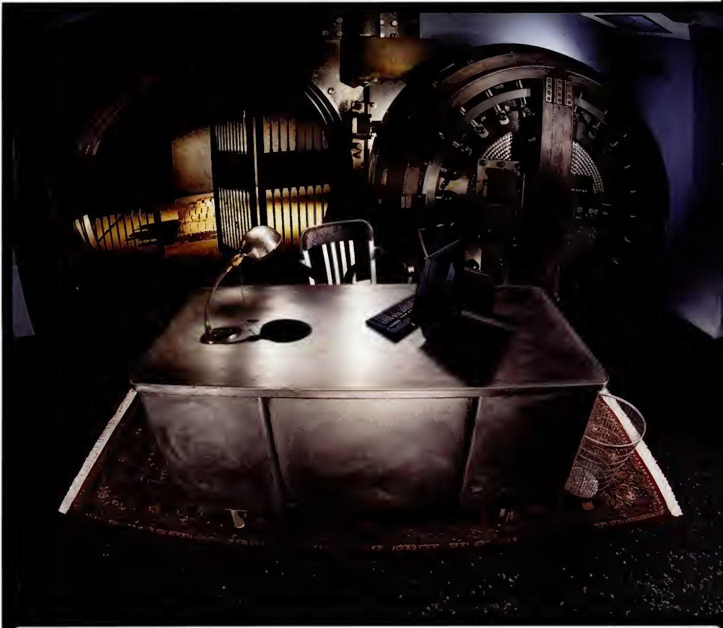
By John Cox
Santa Clara, Calif.

Just two weeks after Intel Corp. President Andy Grove told Comdex/Fall '97 attendees that the PC industry must redefine its business, the chip maker did just that: by embracing network computers (NC) and other so-called thin-client computing devices.

Intel last week said it has drafted guidelines for an array of Intel Pentium-based "lean-client" devices and network servers, on which the clients rely for storage, file management, application processing and other services.

Lean client is Intel's term for any computing device that differs from the traditional Windows PC, with its local hard drive, systems

See Intel, *page 72*



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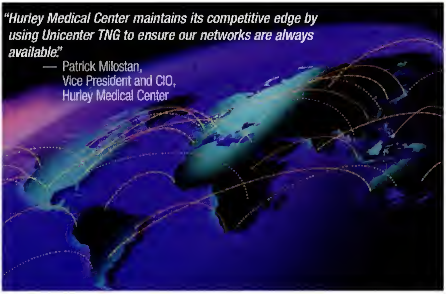

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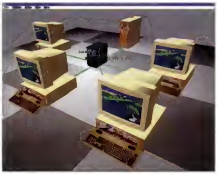

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FIDDLING WITH THE FORUM

The ATM Forum is trying to change with the times, says President George Dobrowski. Page 31.

THE CABLE GUYS

Targeting cable TV operators, Cisco last week rolled out its uBR 7246 Universal Broadband Router. Page 14.

DO RUN, RUN DOOLAN

Former Cisco executive Paul Doolan leads broadband IP router start-up Ennovate. Page 25.

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This Week

Only on Fusion

Web servers. Even if you're not Microsoft trying to distribute a new Web browser over the World Wide Web, your Web site might run into unexpectedly high levels of traffic. In a special report, we show you how to prepare. **DocFinder: 5038**

Keeping Current. Fred McClimans explains why network companies such as Cabletron can expect to see even more shareholder lawsuits in the future. **DocFinder: 5041**

Question of the week 1:

A user rolling out a four-campus network based on multimode and single-mode fiber wants to get ready for Gigabit Ethernet, but is concerned by a recent *Network World* article about potential distance limitations. He seeks advice on the best type of fiber to use. **DocFinder: 5039**

Question of the week 2:

"Using MS SNA Server V3.0, I'm trying to define VTAM 4.3 definitions for an 802.2 DLC connection over a 4M token ring connected to an FEP running NCP V7.4 on an IBM 9021-860 mainframe. Can't find any examples ... Does anyone know how to set this up or where to look for examples?" **DocFinder: 5040**

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News briefs, December 8, 1997

Ipsilon, we hardly knew ye

■ IP switching pioneer Ipsilon Networks, Inc. is about to be snapped up. But contrary to recent speculation in an industry newsletter, the buyer is not likely to be Ascend Communications, Inc. or Cabletron Systems, Inc. Ipsilon is hopeful that a deal can be worked out before year-end, according to a source close to the negotiations. Ipsilon spokespeople declined to comment.

MCI speed boost doesn't translate to lower prices

■ MCI Communications Corp. today will announce it is boosting the speed of a 170-mile California segment of its backbone network to 80G bit/sec by combining eight 10G streams via wavelength division multiplexing. But long-promised price cuts from carrier net upgrades are not expected for some time. MCI still is working on extending an earlier upgrade in the Midwest to 40G bit/sec, and an MCI spokesman was unable to say when the investments would result in cheaper bandwidth for users. Last week, MCI raised T-1 and other private-line prices by about 4% before term and volume discounts.

MCI'S PRICE INCREASE

MCI T-1 list price before Dec. 1:
▶ **$3,396** plus **$4.06** per mile

MCI T-1 list price starting Dec. 1:
▶ **$3,532** plus **$4.22** per mile

No happy holidays from Newbridge

■ Newbridge Networks Corp. last week laid off another 280 of the 1,100 employees it acquired when it bought UB Networks, Inc. in January. That brings the layoff total to 680. The latest layoffs are an attempt to improve the bottom line of Newbridge's LAN hardware division, which was supposed to get a boost from the purchase of UB. Instead, quarterly enterprise sales for Newbridge have dropped from $100 million to $45 million. The problem: failure to deliver switching cards for the VIVID Multilayer Switch 5000, formerly the UB GeoLAN 5000. Now seven months late, the switching cards will ship by the end of January, the company said.

A tear attack

■ Security vendor WheelGroup Corp. last week said it has identified a denial-of-service network attack called "Tear Drop" that works by having the program code send out improperly formed TCP/IP packets to a targeted machine. According to research director Kevin Ziese, Tear Drop's malformed packets can cause servers to crash or reboot or can corrupt hard disks. WheelGroup said it was up to operating systems vendors and router companies to discover defensive measures for Tear Drop.

Java in your hand

■ A British company called Concept Technologies plans to launch a handheld mobile network computer (NC) in mid-1998 based on Sun Microsystems, Inc.'s JavaOS. The NC, dubbed the Pic Pocket, resembles a handheld computer. It has a full keyboard and color display, but it will not come with Windows CE or a suite of productivity applications like many handheld computers on the market today. Instead, the device will rely on users downloading Java applications, which can be stored locally in the device's 10M bytes of flash memory for disconnected computing. The Pic Pocket will come with JavaOS 1.1, Sun's HotJava browser with an integrated Java Virtual Machine and network support for TCP/IP, Ethernet and point-to-point protocol. The device will cost about $1,000.

3Com hit with class action suit

■ According to Reuters news service, investors in modem and network company 3Com Corp. last week filed a class action lawsuit claiming that 3Com misled the public about the extent of problems in the modem market after it bought the U.S. Robotics modem company. The lawsuit, filed in district court in Illinois, alleges the company issued false statements about its financial health. 3Com last week admitted that many of the units now in retail locations could not be sold at the listed prices and it plans to take big losses to pay for the problem. 3Com declined to comment on the lawsuit.

FCC hears 800 number rate complaints

By David Rohde
Washington, D.C.

Four rate hikes and a surcharge in one year are finally taking a toll on users of 800-number services.

Last week, a coalition of corporate users, along with the Consumer Federation of America, petitioned the Federal Communications Commission (FCC) to help roll back recent increases in 800 calling costs.

The coalition attacked recent FCC decisions requiring long-distance carriers to pay fees to the owners of pay phones every time someone dials an 800 or 888 number from their phones.

The group asked the FCC to reduce its current compensation rate of 28.4 cents per call to no more than 6 cents per call in hopes that long-distance carriers will pass along the savings.

AT&T cited the FCC's pay phone compensation schemes adopted in February and May as the reasons for across-the-board 800 price hikes.

There recently were two other 800 rate hikes which were the result of comprehensive AT&T rate increases (see graphic). The four moves apply to all 800 calls, even those that have nothing to do with a pay phone, such as using an 800 number to dial a remote access server or gain Internet access.

In addition, last month AT&T tacked on a 28-cent per call surcharge on calls it can identify as originating at pay phones.

MCI Communications Corp. and Sprint Corp. have instituted 30-cent surcharges in addition to their own recent 800 price increases.

The effect is potentially staggering. Orest Fiume, senior director of network services and workgroup technologies for Nabisco Brands Co., in Parsippany, N.J., estimated a $2.13 million, or 96%, increase in the annual cost of a program that requires sales personnel to dial in for updated route and customer service information.

"We've worked long and hard [negotiating with carriers] to bring our 800 rates down, and we've embedded it into this business process," Fiume said.

Others joining the coalition, dubbed the "Consumer-Business Coalition for Fair Payphone-800 Fees" include airlines, trucking companies and the International Communications Association, a broad-based user group. The coalition also signed up advocacy groups for battered women and runaway kids who pleaded their work depends on receiving and paying for 800 calls originating at pay phones.

Some analysts, noting the recent sharp increase in AT&T's stock price, said users should not be aiming all their fire at the FCC. "[AT&T] should just absorb the cost," said Michael Hills, president of HTL Telemanagement, Ltd., a Burtonsville, Md., rate analysis and consulting firm.

An AT&T spokesman said that the carrier really is not pocketing the full 28-cent surcharge. The surcharge only is being added to users' gross volume, so it is subject to discounts negotiated by users. AT&T is hoping eventually to add the 28-cent surcharge after the discount, then it will consider rolling back rate hikes for non-pay phone 800 uses. ■

FOUR INCREASES IN A YEAR

AT&T recently has raised the list prices for its Megacom 800 service at a fast clip.

Date of price increase	Price per minute	Percentage increase
Nov. 28, 1996	20.35 cents	4.7%
Feb. 27, 1997	20.93 cents	2.9%
May 1, 1997	22.35 cents	6.8%
Nov. 5, 1997	23.19 cents	3.8%

List prices do not include term, volume and negotiated discounts, but percentage changes flow through on most discount contracts. These prices assume usage of 5,000 hours or more per month, with 85% of usage during daytime business hours. Megacom 800 requires a dedicated access line.

SOURCE: HTL TELEMANAGEMENT, BURTONSVILLE, MD

Netopia opens Web-based Virtual Office

New software offers conferencing, file transfers and remote screen-sharing capabilities.

By Ellen Messmer
Almeda, Calif.

Netopia, Inc. wants you to believe you can get an almost free Virtual Office on the World Wide Web.

Under a deal Internet connectivity vendor Netopia struck with GeoCities, Inc., which offers free Web hosting to over one million users, GeoCities will extend its free hosting offer to users of Netopia's Virtual Office 2.0, which lets users do conferencing, remote screen-sharing and file transfers.

The Virtual Office 2.0 software costs $49.95.

The free offer for hosting services, which comes with an e-mail account, only lasts 12 months. After that, it will cost $19.95 per year.

The GeoCities deal represents Netopia's latest attempt to push Virtual Office into the mainstream.

The first version of the product had a desktop focus that required your electronic commerce pals to dial up your computer in order to take advantage of the personalized chat and conferencing it offered.

The problem is Virtual Office 1.0 foolishly presumed desktop machines always would be on and attached to the Internet, said Dave Lewis, vice president of marketing at Netopia, formerly known as Farallon Communications, Inc.

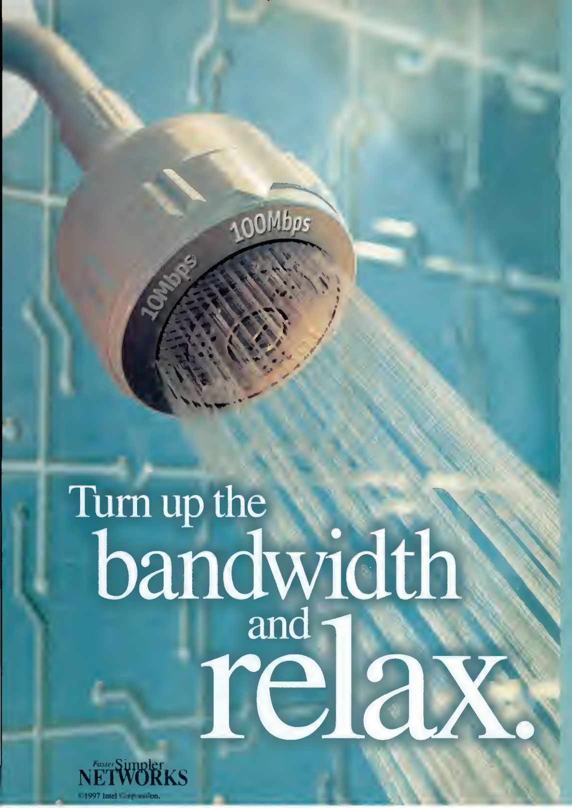
This week Netopia will detail plans that go well beyond the GeoCities deal.

In the second half of next year, the company plans to unveil yet another version of Virtual Office squarely designed to run as part of a Web server.

But don't expect the next-generation server edition to be anything close to free.

It is expected to cost about $10,000.

☏ Netopia: (510) 814-5100



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Product, services boost DSL options

Start-ups NetSpeed and Covad feed the need for remote access speed.

By Tim Greene
San Francisco

Digital subscriber line (DSL) services last week got a double boost as two start-ups announced less expensive and easier ways to deliver the high-bandwidth dedicated service.

NetSpeed, Inc. announced a DSL modem that can support up to 7.1M bit/sec downloads over a regular copper phone line. Better yet, the device does not require the service provider to install any extra equipment at the customer site.

Separately, Covad Communications Co. announced it has started selling in California managed DSL services that, even at their slowest, top ISDN, and at the fastest, equal the speed of T-1. The flat-rate remote access services could cost less than their ISDN and T-1 equivalents.

Fast, affordable, EZ

NetSpeed's new modem, called EZ-DSL, could encourage carriers to accelerate their DSL service rollouts, according to Beth Gage, a senior broadband analyst for TeleChoice, Inc., a consultancy in Verona, N.J. "Anything that makes it easier to provision could speed deployment," Gage said.

COVAD DSL

Digital subscriber line offerings from Covad could undercut traditional offerings.

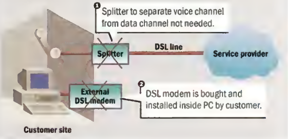
Speed (bit/sec)	Price/ month	Maximum distance
144K	$90	>3.5 miles
384K	$125	3.5 miles
1.5M*	$195	3 miles
1.1M	$195	2 miles

*Download only. Upload 384K.

At $199 for a PC Card EZ-DSL modem, carriers could tell customers to go out and buy the modem and install it themselves, much as they do today with analog modems or ISDN, NetSpeed President John McHale claimed.

EZ-DSL IS EZ FOR CARRIERS

NetSpeed's EZ-DSL eliminates the need for service providers to go to the customer site, therefore saving time and money.


1 Splitter to separate voice channel from data channel not needed.
Splitter
DSL line
Service provider
External DSL modem
2 DSL modem is bought and installed inside PC by customer.
Customer site

Other modem makers are working on similar technologies such as DSL Lite and Consumer DSL. Neither requires any customer-end gear except a modem. But those technologies top out at 1.5M bit/sec download speeds and will not be ready for testing until late next year.

EZ-DSL, on the other hand, delivers the full range of speeds offered by rate adaptive DSL, 7.1M bit/sec downstream and 1M bit/sec upstream, which otherwise would require a separate customer-end device. Known as a splitter, the device picks an analog voice channel out of the DSL modem chatter.

McHale said EZ-DSL modems are available now for service providers to test and will go into full production in March.

Some service providers are taking a wait-and-see attitude. "A lot of these announcements make it sound like this stuff is very real today, and I don't think that is an accurate description of the situation," said Tom Starr, a senior member of Ameritech Corp.'s technical staff who is working on Ameritech's DSL rollout.

He said the type of telephone the customer has can interfere with the data performance of a splitterless DSL modem. Customer modems also need to be interoperable with switching office modems made by other vendors, Starr said.

DSL for the enterprise

Not waiting for such DSL hardware improvements, Covad is forging ahead with service offerings in the San Francisco area. The company plans to expand to a half dozen other major metropolitan areas next year. Covad would not name the areas.

Stanford University is testing the service with the idea of switching ISDN telecommuters to DSL, according to Chip Haven, assistant director of telecommunications services at the school. Depending on where the remote user calls from, ISDN monthly bills can be hundreds of dollars, whereas Covad's 144K bit/sec service is a flat $90 per month, he said.

✆ Covad: (408) 490-4500; NetSpeed: (512) 257-4770

DSL modems get a reality check

The blazing multimegabit speeds of digital subscriber line (DSL) modems can be drastically reduced depending on how much data you try to send over them.

Tests done by Fluke Networks, Inc. found that DSL modems have limits on the number of frames per second they can process, depending on the size of the frames. Also, simultaneous upstream and downstream traffic can limit modem performance, said the company in a presentation at the Capitalizing on Copper III conference last week. Fluke is a test tool vendor in Everett, Wash.

Users should be forewarned that the speeds promoted by modem makers are based on an ideal environment and know that real world performance is much different, said James Kahkoska, a test engineer for Fluke.

Fluke tested modems from six vendors but would not say how individual modems performed, nor would it list which modems were tested.

The tested modems could download 1,518- to 1,024-byte Ethernet frames at 2.5M bit/sec, but when the frame size dropped below that, so did throughput, Fluke said. With 256-byte frames, throughput dropped below .5M bit/sec.

High-volume upstream traffic can affect throughput for downstream traffic, Fluke found. Downstream throughput could be sustained until upstream traffic reached 700K bit/sec. With upstream traffic at 1M bit/sec, downstream rates dropped below 5M bit/sec, according to Fluke.

Most modem vendors set 640K bit/sec as the maximum upstream speed for modems that download at 6M bit/sec or greater. But 10M bit/sec Ethernet connections to the modems can overdrive the modem and affect upstream bandwidth, Kahkoska said.

When Fluke varied upstream traffic and frame length, it found the effects on throughput were not always linear. For example, downstream throughput declined steadily as the modem was fed 64-byte upstream frames at rates between 1M bit/sec and 5M bit/sec. But it increased again between 5M bit/sec and 6M bit/sec, only to drop off again and spike for a second time between 8M bit/sec and 9M bit/sec.

Kahkoska recommended that users test individual modems to determine whether they meet the specifications required by the applications they want to use.

— Tim Greene

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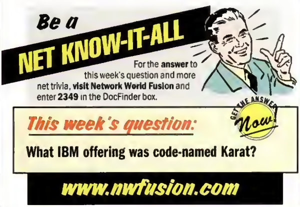

For the **answer** to this week's question and more net trivia, **visit Network World Fusion** and enter **2349** in the DocFinder box.

This week's question:

What IBM offering was code-named Karat?

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Novell to outline new Java server strategy

Open Solutions Architecture redefines the building of NetWare server applications.

By Christine Burns
New York

Novell, Inc. will use Fall Internet World '97 this week to try to make a definitive mark on the emerging server-side Java application market. The company is expected to unveil a new framework, called Open Solutions Architecture (OSA), which outlines how all of its existing NetWare-based services will become "Java-tized," making it easier to build and run server-side Java applications on a Novell platform. Users were happy to hear that Novell is finally giving them Java details.

Hallmark Cards, Inc. is developing Java-based intranet applications that run on Unix boxes. But Dan Blevins, a technical analyst at the Kansas City, Mo., greeting card maker, said Hallmark had planned to leave its 60 NetWare 4.X servers out of the Java application loop because Novell has failed to provide any details.

"But if they let us run those Java apps across both types of boxes, we will take another look at including NetWare in the Java mix," Blevins said.

Architectural details

OSA will include server infrastucture pieces that allow Java programs to run on NetWare servers. It also will include framework components that provide links between Java applications and underlying services such as Novell Directory Service (NDS).

Hallmark's Blevins said the directory hooks would help control user access to distributed Java applications. "NDS is great for handling user access to all types of network resources. Since anybody with a browser can access Java apps across the network, this kind of user-based control will become crucial," Blevins said.

Novell officials would not disclose a timetable for delivering the OSA pieces.

The OSA server infrastucture components will include the Java Virtual Machine 1.1.3 for running the Java applications on NetWare and a just-in-time compiler that compiles Java code on the fly to speed up Java applications.

An object request broker and a trader service also will be included as part of OSA. Together, these services help Java applications locate Java components on a network.

Novell's *Chris Stone says new OSA framework will push NetWare to the forefront of server-side Java.*

The framework components will include servlets, which are server-side applets that can be run on a NetWare server. The OSA framework also will allow developers to write applications that can tap into NDS and database programs running on NetWare boxes.

Additionally, the framework will support JavaBeans, a Java-based component API that will let developers write reusable software components that run against NetWare. The framework also will support Java Remote Method Invocation code, which enables distributed Java applications.

Novell will ship its own Java Development Kit for building Java applications for the Novell platform. Java development tools from Sun Microsystems, Inc., IBM and Symantec Corp. also will work within the OSA framework.

The goal of OSA is to attract application developers back to Novell. This development would give customers more business applications that tap into all of Novell's server products, said Chris Stone, Novell vice president of strategy and corporate partnerships.

Server-side Java support will level the playing field for Novell, but will not give NetWare an advantage over any other server platform that supports Java, said one industry analyst. "Java applications will run on any Java-enabled server.

So while Novell will now be able to play, it isn't guaranteed a big win here," said Neil MacDonald, an analyst with Gartner Group, Inc., in Stamford, Conn. ■

Internet World spotlight on electronic commerce, ISP hosting

By Ellen Messmer, Denise Pappalardo and Chris Nerney
New York

If you are headed to the Fall Internet World '97 conference here this week, you will find the aisles filled with new software products for everything from Web management to electronic commerce.

Start-up Sitara, Inc. will introduce SpeedServer, server software it claims can speed Web processing time sevenfold when a Web site visitor makes use of the client component, called SpeedSeeker.

"SpeedServer streamlines the HTTP handshaking process," said Mark Strangio, Sitara's vice president for product marketing. Sitara said the retail firm J. Crew's Web site is a beta site for SpeedServer.

The product, slated to ship at the end of December, will cost $75,000, but the SpeedSeeker client will be free.

Netegrity, Inc. will demonstrate the next version of its Web access control software, SiteMinder 2.1. This version will add support for Netscape servers running on a Solaris Unix platform. Previously, SiteMinder only supported Microsoft Corp.'s NT-based Internet Information Server.

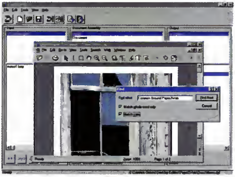
SiteMinder 2.1 will let an administrator control access to Microsoft and Netscape Communications Corp. servers simultaneously from an NT-based SiteMinder management console.

If you are looking for load balancing on the Web, HydraWeb Technologies, Inc. may be able to help.

The company is expected to show the HydraWeb 5000 Series of software modules that support 100M bit/sec channels for back-end servers, as well as HydraWAN for load management across distinct server clusters.

Other new product developments include:

- Hummingbird Communications, Ltd. at the end of December will ship a new version of its Common Ground Web Publisher that can handle scanned documents, making them searchable across the Web.
- Cognos Corp. will ship DataMerchant 1.0, an NT-based gateway that sits between a Web server and a back-end database and helps companies sell marketable types of data. DataMerchant 1.0 handles subscriber authorization or credit card billing, for instance, and then pumps out the data to the customer desktop or to any ODBC- or SQL-based application, said Cognos marketing director Graham Macintosh.



Hummingbird's Common Ground Web Publisher *will be able to handle scanned paper documents, making them searchable across the World Wide Web.*

- Electronic commerce software vendor Elcom Systems, Inc. will introduce version 2.0 of PECOS Procurement Manager for managing multiple electronic catalogs, online ordering and electronic invoicing over the Web. Price tag: $70,000.
- INEX Corp. will unveil INEX Commerce Court Lite, a $595 Web storefront designed to work best when the server is hosted at an Internet service provider, according to Steven Lamb, INEX president and CEO.

This "Lite" storefront limits the merchant to 500 items, though a "Professional" version, available for $995, supports a virtually unlimited number of items.

- Marketwave Corp. will announce shipment of Hit List Live 3.5 for real-time Web traffic data collection, processing and reporting.
- VIP Calling, Inc., an IP telephony service provider start-up, is announcing a global voice service that uses the Internet for transport. VIP Calling has deployed 10 Vienna Systems Corp. Vienna.way Internet telephony gateways, according to a source close to the company.
- Delta Three, Inc. will unveil new global Internet telephony services. Delta Three is deploying equipment at 15 sites throughout the world to support its new service.

Service providers: Hosting you live from the 'Net

CompuServe Corp. is enhancing its "C from CompuServe" service with PlaceWare, Inc.'s PlaceWare Auditorium software, a presentation software kit that will let CompuServe customers host online events and online business presentations.

PSINet, Inc.'s PSIWeb division also is announcing a streaming service that will let users host live events on their Web sites.

In other ISP news, GTE Internetworking, formerly BBN Corp., will announce enhancements to its SitePatrol managed firewall services. The ISP is expected to announce partnerships with new security vendors that will ultimately give customers more choices when rolling out SitePatrol service.

TCG CERFnet and MCI Communications Corp. separately will announce new virtual private network (VPN) services at the show.

TCG CERFnet is rolling out its Enterprise-Quality VPN Service that will let customers set up an intranet and/or extranet over TCG CERFnet's backbone with a 99.8% network availability guarantee. This fully managed service is expected to be available immediately.

MCI is enhancing its existing Intranet service, which was announced at the Internet World show in March. Details about this service are sketchy, but it will be a bundled VPN service offering that will include a "suite of services," one company spokeswoman said. MCI also will announce Internet backbone upgrades. ■

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Early adopters offer NT cluster hints

Microsoft two-way failover clusters are worth the effort, users say.

By Christine Burns

When newly elected Pennsylvania Treasurer Barbara Hafer stepped into office on Jan. 21, she was looking for system redundancy.

But she was not getting any from the IBM 9000 mainframe charged with printing upwards of 75,000 checks and handling 20,000 electronic transfers per day on behalf of the commonwealth. So she banked on a $250,000 Microsoft Corp. Windows NT cluster-based system to get the uptime she needed to pay Pennsylvania's bills.

Now the treasurer's office has a system in place that clustering project manager Robert Kutler said will not go down unless four catastrophic failures occur.

Cliff Schommer, *an NT systems engineer with First Union Capital Markets, warns that a Windows NT cluster will affect all aspects of your network.*

DONNA BISE

Kutler last month installed a Dell Computer Corp. cluster consisting of two PowerEdge 6100 servers with 4G bytes of RAM and a 54G-byte hard drive.

While it is more or less sailing smoothly now, Kutler admits installing Microsoft Cluster Server (MSCS) software and the corresponding hardware was not as easy as sticking Tab A into Slot B. NT clustering has been available since mid-October and currently supports two-node failover.

Kutler and several other early adopter's advice for installing NT clusters falls into three categories:

- While it might seem obvious, making the right contacts at Microsoft can make deploying MSCS simpler.
- Tweak all existing software and network connections affected by NT clustering.
- Take steps to ensure that the configuration can support all your users and applications should a failover occur.

The most valuable thing Kutler said he did was find Microsoft insiders who knew all of MSCS's quirks. One way to make this important connection quickly is to call Microsoft Executive Vice President Steve Ballmer, Kutler said. Ballmer assigned the treasurer's office an inside contact who responds to questions around the clock. "Little silly stuff that would have taken us hours to pinpoint on our own was wrapped up in minutes," Kutler said.

For example, Kutler mistakenly began testing MSCS on NT 4.0 instead of the beta version of NT 4.0 Enterprise Edition and had trouble loading the software. His Microsoft contact pinpointed the error immediately.

Equally important is using only certified hardware components. Users caution that even doing something like adding an uncertified memory card could cause problems with the entire system. There is an MSCS hardware compatibility list at www.microsoft.com/hwtest/hcl.

Network preparations

Administrators looking to deploy MSCS must be aware it affects the entire network environment, said Cliff Schommer, an NT systems engineer with First Union Capital Markets, in Charlotte, N.C.

The bank is running MSCS on two four-way Digital Priora ZX/6000 servers, which are providing guaranteed printing services to the bank's 3,000 users. With the addition of MSCS, Schommer had to re-evaluate the names of 300 print queues to ensure there were no duplicates. This was necessary because if files with the same name existed on both servers, one would get deleted during the failover.

It also is necessary to have a dynamic IP configuration service in place, said Erskin Thompson, a systems analyst with Tandem Computers, Inc.'s support division. Thompson has worked with Texas Commerce Bank to deploy four NT clusters for guaranteed availability of Lotus Development Corp.'s Lotus Notes to 8,500 users. The clusters include two Compaq Computer Corp. Proliant 6500 servers and a 54G-byte CR disk array.

Having static IP addresses tied to each server's network card will prevent users from connecting to the live server in the event of a failover, Thompson said.

Applications need clustering attention too. All existing network applications — aside from NT file, print and Web serving — must be altered to run on MSCS.

Users agreed it was easiest to turn to outside consultants for the extra help in porting existing programs to clustered NT nodes.

Texas Commerce paid Tandem engineers to write specialized code, packaged as a Dynamic Link Library, which allows Lotus Notes to failover to the live Windows NT node.

Because Pennsylvania Treasury applications have several dependencies on Microsoft SQL Server, it would have been impossible to port the tables to the clustered systems without the Wizard programs included in the beta of SQL Server Enterprise Edition, according to Kutler. He used a beta version to set up his NT cluster, but Microsoft has since shipped the final product.

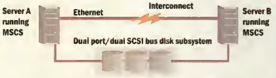
The early adopters also advise that you carefully calculate the number of concurrent users each node will need to support in the event of a failover. "You don't guarantee application availability if your second server can't pick up the load of the failed one," Thompson said.

Thompson recommends running each NT node at 60% capacity. Users only will notice a slight degradation in service if a failover takes place. You also can run an NT cluster in an Active/Standby mode in which one of the nodes stands idle to ensure no application degradation takes place when a failover occurs, Kutler said. ■

NT CLUSTERING COSTS

The Gartner Group consultancy advises users to look at all of the costs associated with deploying a low-end, two-node Microsoft Cluster Server (MSCS) configuration. These numbers assume the pre-existence of compliant server hardware.

Line item	Price
Two Fast Ethernet cards	$250
Dual port/dual SCSI bus disk subsystem (no disks)	$3,500
NT 4.0 Enterprise Edition clustering software (MSCS)	$3,999
Hardware installation and testing: 90 person hours at $70/hour	$6,300
Software installation/setup/testing: 160 person hours at $70/hour	$11,200
Total	$25,249



Should Server A fail, all of the applications running on it would automatically switch over to Server B. Since all data is stored on the shared disk subsystem, no information is lost during the failover process.

Cisco dives into the CATV data delivery business

uBR 7246 combines 7200 router and broadband modems.

By Jim Duffy
San Jose, Calif.

Cisco Systems, Inc. last week entered the cable TV data market with the introduction of the uBR 7246 Universal Broadband Router, an integrated device that also houses broadband modem cards.

Targeted at cable operators offering Internet access, the uBR 7246 complies with the Multimedia Cable Network System (MCNS) standard for compatibility with cable data equipment from multiple vendors.

The uBR 7246, based on the Cisco 7200 router, provides more than 600M bit/sec of bandwidth and can switch 100,000 packet/sec, Cisco said.

Along with the uBR 7246, Cisco rolled out a new version of IOS that enables Internet and cable service providers to offer varying levels of service to subscribers. Version 11.1CC of IOS features two Internet quality-of-service capabilities: committed access rate (CAR) and Border Gateway Protocol (BGP) policy propagation.

The uBR 7246 *will concentrate cable modem connections to provide access to the Internet.*

CAR allows network operators to allocate bandwidth and limit traffic according to network policy. BGP is used to generate classification policies and uses routing updates to distribute information throughout the network.

GlobalOne, a Reston, Va.-based service provider, contributed BGP policy propagation to IOS 11.1CC, said Scott Wainner, manager of internetwork engineering at GlobalOne.

BGP policy propagation and CAR enable ISPs to rearrange bandwidth to meet changing traffic demands without physically rearranging the network, Cisco said. But Wainner said there are a number of constraints that have to be applied to the physical network in order to use IOS 11.1CC.

"Most are within the Cisco routers themselves," Wainner said. "How much processing power they have, the compatibility with various interfaces and cards — I think that most of those things will be overcome."

Pricing and availability of the Cisco uBR 7246 will be announced in the first quarter of 1998. ■

Internet telephony for the masses

By Denise Pappalardo

Worldwide IP telephony services are one step closer to reality with a new service from ITXC Corp.

Founded by Tom Evslin, a former AT&T WorldNet vice president, ITXC's WWeXchange Service is designed to make IP voice services readily available to business users around the world.

WWeXchange will let Internet service providers and Internet telephony service providers (ITSP) offer customers voice over IP services by connecting their networks through an ITXC Internet telephony gateway. Along with the gateway, ITXC takes care of billing for services.

Tom Evslin, *president at ITXC, is rolling out the company's first IP voice service.*

Ultimately, the WWeXchange network will be a conglomeration of ISP networks around the world.

Although WWeXchange will not offer the same voice quality as toll service on a carrier's long-distance network, the quality will be better than a build-it-yourself IP telephony system or using a single ISP, said Evslin, ITXC's president.

> *ITXC will work with multiple ISPs' voice services and will get out to more customers faster than a single ISP could, said Jeff Pulver, president of Pulver.com.*

WWeXchange Service is similar to network architectures set up by Internet roaming companies, such as i-Pass Alliance, Inc. and AimQuest Corp.

In fact, i-Pass is providing ITXC with its back-end billing, typically referred to as settlement software. All settlements will take place at ITXC's routing, authorization and settlement hub in New York.

While business users typically do not care what company their ISP is wholesaling service from, ITXC's strategy will bring a global IP telephony service to users more quickly.

ITXC will work with multiple ISPs' voice services and will get out to more customers faster than a single ISP could, said Jeff Pulver, president of Pulver.Com, a Melville, N.Y.-based consulting firm that specializes in IP telephony.

ISPs that offer WWeXchange voice service to their customers will be able to support IP voice calls from users' PCs or telephones.

When users make IP voice calls, the traffic travels over the ISP's network to the nearest ITXC deployed gateway. ITXC is using VocalTec Communications, Ltd.'s gateways throughout its network.

Before the call travels to its final destination, it goes through ITXC's New York hub, where the call is authenticated and routed to the appropriate gateway.

The receiving gateway sends billing information to ITXC's hub, where i-Pass software computes usage and billing information that is then sent to the ISP. The ISP is responsible for billing customers.

ITXC's back-end procedures will be seamless to the ISP or ITSP customers, Evslin said. ■

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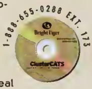

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Local Networks

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Briefs

Seagate Software, Inc. *this week will begin shipping a new* **server management product** *for mixed NetWare and Windows NT LAN server environments. The new product offers simplified installation and administration features. Seagate Manage Exec 5.0 includes the existing LanAlert 4.5 server monitoring software and a new Web-based management interface. The latter gives network managers a simplified installation process via the World Wide Web and lets companies track up to 10,000 servers from anywhere on the Internet or corporate intranet.*

Pricing for Seagate Manage Exec 5.0 starts at $895.

✆ Seagate: (800) 327-2232

Bluecurve, Inc. *this week will announce a new version of its suite of* **NT-based capacity planning tools** *that will help companies plan for new Microsoft Corp. Exchange rollouts. Dynameasure 2.0 allows network managers to simulate the toll that running a customized Exchange deployment will take on an existing NT network. The product creates the workload and then collects the server, network and client utilization data and presents it in customizable reports.*

Pricing for Dynameasure 2.0 starts at $195.

✆ Bluecurve: (510) 267-1500

Network Integrity, Inc. *last week announced a new version of its* **backup and recovery software for Novell environments.** *LANtegrity 4.0 for NetWare offers byte-level data protection, instant server fail-over, support for Btrieve and GroupWise databases and enhanced media management for NetWare servers in LAN and WAN environments. LANtegrity 4.0 server software costs $6,995 and includes a 100-user license.*

✆ Network Integrity: (508) 460-6670

Storage routing is the way to go, Crossroads says

Crossroads hopes to route server requests among multiple storage devices and give SCSI hosts fiber channel connections.

By Marc Songini
Austin, Texas

Crossroads Systems, Inc., recently christened a storage router, the first device in a series to deliver system independence in storage.

A storage router, according to Crossroads, is a data transmitting device that allows users to integrate different servers into a storage network. Crossroads claimed it will bring SCSI users into the forefront of storage technology.

The storage company has started shipping the CrossPoint 4100 Fibre Channel-to-SCSI router. The product lets users run data from SCSI-based servers over fiber channel lines.

With the 4100, users can connect SCSI host systems to fiber channel subsystems.

Users also can employ TCP/IP technology without discarding their SCSI investments because the 4100 can encapsulate data coming through a SCSI connection in IP packets, said Marc Farley, director of marketing for Crossroads.

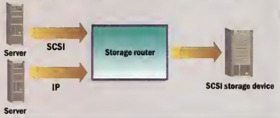
By using the 4100 router, users no longer need to make sure their storage peripherals are in the same room as the servers downloading the data needing to be stored. In fact, the router can sit about 10,000 yards from a server; typically, SCSI cabling cannot lie more than 20 feet from the host adapter.

The 4100 includes a single 100M bit/sec fiber channel port, as well as an Ethernet port for SNMP management. It also includes a serial port, a SCSI port and ultra-SCSI port.

The 4100 interoperates with any server operating system that supports SCSI and fiber channel, including Unix and Windows NT.

CROSSROADS' MULTIPROTOCOL STORAGE ROUTER

Storage routers can transmit data in both IP and SCSI protocols.



Get more online:

5014

- A Crossroads white paper that explains storage routing
- A fibre channel primer
- A listing of fibre channel storage vendors

www.nwfusion.com

The need for scaling

"SCSI is not built to have multiple systems attached," Farley said. "One of its deficiencies is that it doesn't scale. With fiber channel, lots of systems can share lots of devices and it's designed in a way that it can run multiprotocol."

Crossroads said that before the 4100 came out, it was always necessary to attach the SCSI connection directly to the server.

A storage net

With the 4100, users can run fiber channel cabling anywhere and attach a SCSI connection to it, making it a genuine storage network.

There is no limit to the number of servers that are attached to the fiber channel loop. The router allows users to establish storage management operations, such as remote mirroring and centralized data backup.

The 4100 costs $4,995 and is shipping now.

✆ Crossroads: (512) 349-0300

Cabletron doubles port density, drops prices

Company drops prices on SmartSwitches and renames MMAC-Plus line.

By Robin Schreier Hohman
Rochester, N.H.

Cabletron Systems, Inc. is announcing two new Fast Ethernet switches for its SmartSwitch family that will double port density and sell for 25% and 65% less than current products.

In addition, Cabletron is renaming its popular MMAC-Plus hub, the SmartSwitch 9000, in an effort to emphasize the interoperability among its product lines.

More SmartSwitch ports

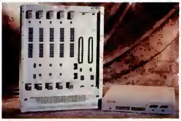
One new switch will fit inside the SmartSwitch 9000 hub and will deliver 24 dedicated 10G/100G bit/sec copper and two multiload fiber ports. The new switches will cost about $654 per port, down from $1,999 per port — a drop of more than 65%.

The other new switch will slide into the SmartSwitch 6000 and double its previous port density to 16.

The new switch will sell for $562 per port, about 25% less than the previous highest density switch in the series.

Both new switches will be available by year-end.

The rebranding is an effort to highlight that all SmartSwitch products, including the stackable 1000, the 2000 for workgroups, the 6000 for wiring closets and the 9000, which is a large data center chassis, share the same core architecture. All SmartSwitches have a simple bus, Layer 3 switching capability and smart trunking, which lets users interconnect Cabletron's switches. The SmartSwitch 2000 is a low-end Ethernet switch for workgroups.



Cabletron *says it has shipped more than one million ports worth of its SmartSwitch 2000 and SmartSwitch 6000 devices.*

In a related announcement, Cabletron said it has shipped one million ports of SmartSwitch 2000 and SmartSwitch 6000 in the past nine months.

Cabletron estimates 29% of those sales are international. The company is clearly looking to expand its overall market share with its acquisition of Digital Equipment Corp.'s network unit (*NW*, Dec. 1, page 14).

The new module for the renamed SmartSwitch 9000, the 9H423-26, has 24 autosensing 10G/100G bit/sec switched Ethernet ports and two switched 100FX Fast Ethernet ports. It lists for $16,995 and is available now.

The 6H122-16, the new module for the SmartSwitch 6000 for wiring closets, will double port density to 16 and costs $8,995. It is scheduled to ship by year-end.

✆ Cabletron: (603) 332-9400

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IRED WINDOWS

Beware of newbie computer pundits

Try as I might, I simply can't get away from Microsoft and its legal and public relations problems.

Today I want to look at what happens when respected people outside the industry attempt to talk about computers.

First, though, an aside to those readers who've written to tell me that I'm an anti-Microsoft bigot (among the printable epithets). I'd like to invite you to a meeting with the people who've called me a Microsoft sycophant (also among the more printable epithets), but I can't find a large enough meeting room.

Instead, let me set the record straight as to where I stand on Microsoft. I think the company is a good applications vendor. Some of its apps are best in class, others are quite poor, but on average they're all quite good.

As an operating systems vendor, Microsoft does a fair job. Torn between an OS for home as well as business computers, Microsoft has satisfied neither market, but provides an adequate OS nonetheless.

When it comes to networking, Microsoft has done an abysmal job, but it's getting better. After 12 years and at least three iterations of products, though, it is surprising it's not much better.

Now back to the legal problems. *Forbes* magazine is normally only quoted in computer circles when it tells us how much Bill Gates, Michael Dell and the other techno-billionaires are worth.

The Dec. 1 issue, though, carries an article by respected analyst Peter Huber, a senior fellow at the Manhattan Institute. Unfortunately, Mr. Huber demonstrates an unsurprising ignorance of computer operating systems and a surprising misunderstanding of antitrust law. He begins by stating: "Antitrust lawyers, whose mission it is to protect consumers from price gouging . . ." Sorry, antitrust law is about protecting businesses, not consumers.

Dave Kearns

Mr. Huber then goes on to make an absolute muddle of operating systems, talking about what's shipped in the box, what's integrated and how to extend the OS through add-ons. It's not brain surgery: Either something is part of the OS or it's not. If it's not, it's an application running on top of the OS.

Internet Explorer cannot be considered a part of the Windows operating system any more than Notepad or Wordpad can. They're convenient utility applications that may be shipped with the OS, but are not a necessary feature of the OS.

It's quite cut and dried. Gates better start writing those million-dollar checks.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.

Tip of the week

Columbia Data Products SnapBack, a backup and restore program for NetWare and NT, includes a hidden gem: Its NetSizer utility, which allows you to increase the size of a NetWare partition without losing data. You could upgrade a 2G drive to 4G by installing the 4G, creating a 2G NetWare partition and mirroring the original disk then removing the 2G drive and running NetSizer against the 4G drive. Where this used to mean 6 to 12 hours of downtime to restore from tape, it now could be accomplished with only an hour or two lost. Get more info from www.cdp.com.

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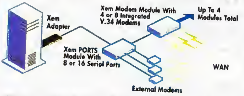
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Briefs

New Oak Communications, Inc. *announced the availability of a high-port density access switch that* **enables customized network access** *based on Microsoft Corp. and Novell, Inc. directories. The company classifies the NOC 4000 as an extranet access switch designed to give remote users limited access to private networks using the Internet as the access network.*

The NOC 4000 supports 200 to 2,000 dial-up users. It costs $50,000 and is available now.

☎ New Oak: (978) 266-1080

IBM *recently announced some* **product rebates:** *3172 Interconnect Controller customers who buy a new 2216 Model 400 Multiaccess Connector can receive a $5,000 rebate if it is installed between Dec. 31, 1997 and June 30, 1998. Users who buy the 3746 Multiprotocol Controller are eligible for rebates from $900 to $1,200 if the installation date is between now and March 31, 1998.*

Buyers of IBM's *3746 Multiprotocol Controllers might be eligible for a rebate.*

☎ IBM: (800) 426-4968

Digital Link Corp. *and* **NetScout Systems, Inc.** *recently teamed up to enable network managers to monitor congestion, availability and throughput in frame relay networks.*

Using **Digital Link Integrated Performance Monitoring (IPM) software** *in its DSUs/CSUs, along with NetScout probes and NetScout Manager Plus software, users can produce real-time charts and graphs depicting statistics, history, alarm and event tables based on Remote Monitoring standards.*

IPM is available with Digital Link's Solo T-1 DSUs/CSUs for $1,799. Upgrades to existing Solos cost $300.

☎ Digital Link: (408) 745-6200

Cisco engineer jumps ship for start-up

Ennovate lands Tag Switching architect for chief technology officer slot.

Q&A Ennovate Networks, Inc. is a Boxborough, Mass., start-up developing broadband multiservice IP routers. The company, funded by Toshiba Corp. and Mitsui & Co., Ltd., just named Paul Doolan chief technology officer. Formerly a Cisco Systems, Inc. software engineer, Doolan was one of the developers of Cisco's Tag Switching technology and is a contributor to the Internet Engineering Task Force's Multiprotocol Label Switching (MPLS) effort. Doolan recently spoke with *Network World* Senior Editor Jim Duffy about Ennovate, Cisco and MPLS.

Why did you come to Ennovate?

When we started the MPLS work or the Tag Switching work at Cisco we wanted a bunch of people to join in and we signed Toshiba up. I was given the job of talking to these guys.

So I already had knowledge of these people. I understood the product technology and to some extent the strategy — as much as you can being a partner. When they said Ennovate, I realized, 'Boy, that could be quite a neat opportunity.'

Was there anything going on at Cisco that prompted you to leave?

It was a difficult decision to leave. It's a great company. Some of the people in Cisco are the best in the industry. But the upside of this opportunity is much more attractive. In Cisco, I was part of the architecture team, but I was never going to get [Cisco CEO John] Chambers' job or [Cisco chief technology officer] Ed Kozel's job. And frankly I wouldn't want them. But this is an opportunity to have a different role. Some of my colleagues wouldn't touch that type of responsibility with a barge pole, others would jump at it.

Tell me about the product you're developing, the market you're targeting and the competitive landscape.

We're planning to offer a broadband multiservice router. The protocol war is over: it's IP, but it's multiservice. But I don't want to be a box vendor. What I want is to make it easy for start-up [Internet service providers], alternative carriers, those types of guys, to make money. Everyone is having a problem dealing with growth, finding the guys that can manage, deploy and build their networks. We're simply running out of experienced network operation technicians, the people who design the networks.

"It was a difficult decision to leave (Cisco)."

Paul Doolan, chief technology officer, Ennovate Networks

So our box is one component of a managed service offering that will let these guys essentially roll it in, connect it and go. I want to be able to do that at both edges of the network. So we're building a broadband multiservice router that's part of a whole management infrastructure that allows the guy who buys it to manage the device, to manage the services which are being run across the uplink, to manage the bandwidth and to bill for it. That's stuff you can't do at the moment. You can do it piecemeal. We want to put it all together in one package.

We're going above T-1 through T-3 and OC-3s, and you can't buy that anywhere at the moment. The whole thing together is really quite a compelling story.

Are your competitors then companies like Yurie Systems [Inc.], [3Com Corp.'s] OnStream and the Cisco 3800?

I think we're going to have a much more integrated story. I guess they could take those boxes and try to build my story around it, but they don't have service management and [Application Specific Integrated Circuits] that I've got. They don't have a very integrated voice story. We also have a perfect story and migration path to MPLS.

The big vendors build [large] machines to do these telco-class ATM switches. They need aggregation devices and feeders. They need to bring traffic from the premise up through the aggregation device and then into their big box. And guess what, we're already halfway there with CSR [Toshiba's Cell Switch Router]. With MPLS, we've got a complete story. If they want to go find some other way to run IP, I win as well because I'm doing IP. If they want a gateway device because they believe MPOA [Multi-Protocol over ATM] or NHRP [Next Hop Resolution Protocol] is appropriate, we can run that as well. So we get access both ways.

What is the status of MPLS?

If you come back and ask me next year there still will not be a standard. I don't know if people know, but there are very few standards; there's a huge bunch of Internet drafts and [requests for comment], but there are very few standards. The process is a little tricky. First you have to get all of the geeks in the room and then they argue for a little while. How long that process takes is influenced by how many nice venues there are to have meetings, how many fine dinners and lunches you can have. So that can drag on for a while. There can be political dimensions, there can be technical dimensions. In my experiences, in both the ATM Forum and IETF you get both of

See Doolan, *page 26*

Level 8 offers Web monitoring tool for MQSeries environment

By Marc Songini
Austin, Texas

Level 8 Systems, Inc. is taking IBM MQSeries systems monitoring to the World Wide Web.

The company recently announced MonitorMQ, a software program that watches over MQSeries-based environments for message queuing problems and potential bottlenecks. MQSeries is IBM's asynchronous store-and-forward transaction software.

MonitorMQ can run on 26 different operating systems, including Unix, Sun Microsystems, Inc.'s Solaris and OS/400.

According to Ivan Casanova, director of marketing at Level 8, the program works by deploying client agents throughout the network. The agents monitor MQSeries messaging activity — such as traffic flow, status of halted queue managers and events — gather information and then push the data to a Web server for conversion to HTML, Casanova said.

Any user with a Web-enabled PC in a net can access the HTML information in the Web server. After tapping into the Web server, users can find out how many messages are in a queue, see the traffic on the channels between the different machines and so on.

With MonitorMQ, Level 8 joins Boole & Babbage, Inc., Apertus Technologies, Inc. and Candle Corp. in the MQSeries management tools market. Level 8 is one of the first vendors to offer a Web-based tool. Other vendors typically offer mainframe or workstation-based MQSeries management packages.

The product is shipping now and costs $25,000 to $60,000, depending on the number of platforms desired.

☎ Level 8: (212) 244-1234

Doolan

Continued from page 25

those. There certainly are company tensions. One guy wants his version, the other guys wants theirs. But at the level of the people who are doing the work, there is still a very geeky orientation about trying to do something good and cool, so that work gets done.

My guess is we'll have beta versions toward the end of next year.

What if you want to connect MPOA campuses through an MPLS cloud? Are there any issues with mapping MPOA to MPLS, back to MPOA?

You touched on an interesting one there. Yeah, of course there's going to be issues. What do you normally do with the problem you just posed, what's the normal solution?

Encapsulate?

What does that, a router? You can put a router at either edge of the cloud and have the router deal with it. But that gets you back to the whole reason this label switching business got started . . . Toshiba looked at the model you're talking about but with different technologies. They had classical IP [to] classical IP and some other gorp in the middle, didn't matter if it was MPLS or whatever. In that case, it was ATM.

And the answer was, well, dummy, build a router. So you put a router between your [campus] and ATM. But the routers are expensive and slow. That was a problem. That's why everyone hated, or a lot of people hated, RFC 1577. Everyone said, 'RFC 1577 stinks because you have to have this router there, blah, blah, blah . . .' But there are a lot of bums on seats driving RFC 1577 systems today. It's a tick off item for a lot of people, it's out there in spite of the naysayers. But [Toshiba] looked at this and said, 'The router is a problem, we agree, and we can fix it.' And they built this CSR stuff, which took the router out of the picture.

Mapping from MPOA to MPLS, done at the control plane, will allow you to do exactly what CSR did: classical IP to ATM. Is it going to be tricky? You bet.

What if Cisco ships Tag Switching nine to 12 months before MPLS goes to beta? What does that do to the MPLS effort?

Look at what they say publicly and what they do. Publicly they say, 'We're committed to standards.' I think they'll go that way. The other thing you've got to look at is the working group — they've got a bunch of their top guys investing cycles there. Is Cisco going to waste the time of [Cisco software engineers] Yakov Rekhter, Eric Rosen, Bruce Davies, Dino Farinacci and Keith McCloghrie? I hope not.

But Cisco also says, 'If our customers demand it . . .'

That's a valid thing. Cisco's a big company. They could be agnostic or they could be in disarray or it could actually be a really clever approach to the market. They will build any freaking thing. And then they've covered all the bases. If I had all the money in the world, as much money as God, would I be doing that? Probably. It's a double-edged sword for the customer.

Could you get away with running a de facto thing in [service provider networks]? Yeah, you probably could. Some carriers will do weird, funky things; but most of them don't want the risk. Look at the instability and problems they had with Cisco earlier this year, or with any network outage that the carrier ends up pointing at a particular vendor's technology.

If I was a carrier I would want to be deploying interoperable stuff to reduce my dependence on one vendor and to give me a strategy where, if one vendor screwed up I could put other peoples' stuff in there.

You don't want to throw out all Cisco's or another vendors' equipment; you want to be able to bring in equipment from another vendor. It has to be the same protocol. You don't want half of your network doing Tag and the other doing MPLS. So I think there's a driver from the carriers to produce the standard.

We'll have to wait and see if they've got 80% of the backbone doing Tag Switching by this time next year. I don't think they will. Go ask the carriers what version of IOS they run in the backbone, and then go and understand where Tag Switching is going to be available. These guys are conservative because of the experience they've had. I don't think any carrier is going to say, 'Yeah, I'm going to put Tag Switching in my backbone for six months and then change it to MPLS.' I think they'll wait.

So what is the point of Cisco developing Tag Switching?

Mindshare. Mindshare in the industry as a whole. Experience. Don't forget that the underlying paradigm is label switching. The point in them developing Tag Switching is that the switching mechanism is going to be common. MPLS is switching, Tag Switching is switching.

If you look inside an Ipsilon box, a Toshiba box, a box from Cisco, that part of the software . . . is going to look pretty much identical. And if you are going to support MPLS you're going to do exactly the same thing. The development of [the Tag Distribution Protocol] I was involved in, what's your benefit there? Well, you're going to have to develop [the MPLS Label Distribution Protocol]. It's experience. IOS is a complicated thing. They have to develop this stuff. Having done that, they're in a great position. Just as they say on their slides: 'We will support the standard when it emerges.' Because, guess what? They fiddle with it a little bit and they've turned TDP into LDP. That's way different from starting from scratch to build an MPLS implementation.

When will you ship your product?

I can't give you a date. MPLS is a key part of our product strategy. But to play this game, I have to be doing beta toward the end of next year. ■

Get more online, including Tag Switching and ATM drafts Doolan has worked on.

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The ATM Forum

Blinded by the ATM light

By Denise Pappalardo

Do you remember when the ATM Forum championed ATM as *the* technology to deliver data, voice and video to your desktop over your LAN or WAN?

If so, then you remember the ATM Forum's 25M bit/sec specifications for adapters and LAN switches. And chances are you already know that end-to-end or desktop-to-desktop native ATM support basically never caught on, despite the ATM Forum's efforts.

"ATM has moved beyond the hype and is getting down to the facts, which are ATM works and people are using it."

George Dobrowski, president of the ATM Forum and director of broadband switching and signaling technologies at Bellcore

While the forum's goal of six years ago, to quickly develop specifications so enterprise network managers could buy interoperable ATM-based products and services has not changed, its focus is shifting.

"The ATM Forum is going through another phase of strategic planning," says George Dobrowski, president of the ATM Forum and director of broadband switching and signaling technologies at Bellcore.

The ATM Forum today is more focused on WAN specifications, says Roger Kosak, chairman of the network management working group at the ATM Forum and a software project manager at IBM.

The forum recently ratified its voice- and telephony-over-ATM specification, and its network management group is developing a network element manager to help users manage an ATM backbone using SNMP, Kosak says.

Efforts toward efficiency

The forum is going through some reorganization and consolidation of its own, he says. Some of the technical working groups will be melded and some will be eliminated. The exact details will be worked out early this month at the forum's meeting in Singapore.

The group today is more focused on wide-area technologies, but some analysts point out that this work should be further along. The voice-over-ATM specification that was recently passed explains how to support a voice signal on an ATM network, but the forum still needs to address how to integrate the public switched telephone network with an ATM backbone, says Cathy Gadecki, senior broadband consultant at TeleChoice, Inc., a Verona, N.J.-based consulting firm.

Mixing Internet and ATM technologies is another area in which the forum needs to dedicate more energy, Gadecki says. The majority of the largest national Internet service providers have or will soon deploy ATM in their backbones, yet the Internet still is considered by most to be a "best effort" network. If ATM's quality-of-service (QoS) parameters can be extended throughout the Internet, perhaps ISPs would be able to offer better service-level guarantees, she adds.

The Internet may have been addressed sooner by the forum, but "we underestimated how quickly the Internet would succeed," says Fred Sammartino. Former ATM Forum president and 25M bit/sec ATM bigot, Sammartino now views the world through IP-colored glasses as Ascend Communications, Inc.'s director of IP marketing. The Internet's success basically blew native ATM transport out of the water, he says.

"The forum did not recognize this fast enough, and even today they are not focusing directly on IP enough," Sammartino says. "IP and Internet support is obviously what the world wants."

Although the ATM Forum now is shifting its focus more squarely on WANs, why did most of the industry, including the ATM Forum, tout end-to-end ATM as long as it did and apparently fail to see the emergence of Ethernet and the Internet?

The ATM Forum was established in 1991 by a group of people who saw an emerging technology, ATM, and believed it had an appeal that stretched beyond the world of telecommunications, says Ron Jeffries, principal at Jeffries Research, a Arroyo Grande, Calif.-based consultancy.

Instead of working through standards groups such as the International Telecommunication Union, the ATM Forum decided to develop implementation agreements on its own, Dobrowski says.

The forum, primarily made up of equipment vendors, developed working groups and implementation agreements based on contributions from members. The forum grew quickly and became somewhat unwieldy.

A short time after the forum was established, it had 14 working groups and was approving five to six specifications at every meeting, Dobrowski says. In all, the ATM Forum has approved 86 ATM specifications.

Because the forum was driven by technical contributions from all of its primary members, the forum "chased a lot of rabbits," Jeffries says.

Going off in many directions, the ATM Forum appeared disorganized and the industry started to doubt the technology, he says.

This was one of the reasons the ATM Forum developed the Anchorage Accord at its April 1996 meeting — to bring the group's work into focus.

The Anchorage Accord recognized the ATM Forum's core specifications, on which all future implementation agreements would be based, Dobrowski says. The accord also stated that all new specifications would be backward-compatible.

The Anchorage Accord was perceived as a positive move by the industry, but the forum's ATM blinders kept them in the dark. The group seemed to be missing Fast Ethernet's growth and the coming of the Internet.

Waning in the LAN

"While the forum was struggling hard to focus and say, 'These are the things we will work on,' the market was realizing how to switch Ethernet at 10M and then 100M bit/sec," Jeffries says.

"The reutilization of Ethernet has had a profound influence on ATM," Kosak says. "It's not something the forum has done or not done. People were just reluctant to change adapters and workstations."

"ATM is still very strong in the wide area, but very weak in the LAN and the desktop. Ethernet has won the desktop war."

Fred Sammartino, former president of the ATM Forum, current director of IP marketing at Ascend

Former and current ATM Forum members now recognize that users were not going to change their existing LAN hardware when they could support the same speeds by upgrading their Ethernet gear. But they all believe that ATM is by far a superior technology and offers more flexibility in the LAN than Ethernet.

"One thing is clear; demands for high performance and [QoS] needs can only be addressed with ATM," Dobrowski says. "ATM has moved beyond the hype and is getting down to the facts, which are ATM works and people are using it." ■

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Briefs

MCI Communications Corp. *has won a six-year contract to manage a* **WAN for the Nasdaq Stock Market** *which will be capable of handling a trading volume of eight billion shares per day. MCI will deploy Digital Equipment Corp.'s Alpha servers and Cisco Systems, Inc. routers throughout a custom IP network with a T-3 backbone. MCI already staffs Nasdaq data centers in Connecticut and Maryland and provides remote management from its own Cary, N.C., network operations center. Unlike the nation's other large carriers, MCI and its merger partner WorldCom, Inc. always have shunned the New York Stock Exchange in favor of listing their stocks on Nasdaq.*

The original executive management at **Digex,** *a Beltsville, Md.-based Internet service provider, continues to dwindle since* **Intermedia Communications, Inc. (ICI)** *acquired the company this summer. ICI, a Tampa, Fla.-based competitive access provider, announced that Chris McCleary, Digex president and CEO, is leaving the company. ICI said it encouraged McCleary to stay on in an executive position, but he decided it was in his best interest to leave. In August, Doug Humphry, chief technology officer and Digex founder, also resigned.*

@Home Network, Inc. *last week announced a deal with* **The Fourth Communications Network, Inc. (4th Network)** *to offer high-speed Internet access to major hotel chains. @Home's @Work division is working with 4th Network to provide business travelers high-speed Internet access from their hotel rooms. The services will be based on @Work's cable modem and dedicated telecommunications Internet access services. The service will be available to hotel chains in the first half of 1998.*

ACTA acts up again

Trade group wants ISPs to pay carrier access fees.

By David Rohde
St. Louis

America's Carriers Telecommunication Association has petitioned the federal appeals court here to overturn the Federal Communications Commission's long-standing rule exempting Internet service providers from paying per-minute switched access fees to local exchange carriers.

Switched access fees are charges levied by telephone companies on long-distance carriers for originating and terminating their calls. They now average about 2.5 cents per minute on each end. But ISPs are exempt from paying the fees because of their regulatory status as "enhanced service providers," which are considered to offer value-added services rather than straight transport.

Prodded by ACTA and a number of regional Bell operating companies, the FCC recently considered ending the distinction before being buried in an avalanche of e-mails opposing the idea (see graphic). ACTA's latest move, filed Nov. 17, asks the St. Louis court to overturn the FCC's May decision against bringing ISPs under the access charge regime.

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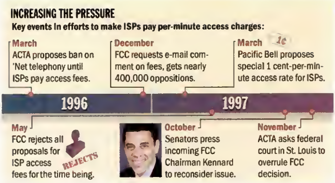
The group, which represents mostly small, long-distance carriers, argues that the Telecommunications Act of 1996 requires the FCC to explicitly charge all users of the telephone network their share of costs for maintaining the network.

"Why should some people who make money out of the network be exempted from paying their fair share?" asked ACTA general counsel Charles Helein.


INCREASING THE PRESSURE

Key events in efforts to make ISPs pay per-minute access charges:

1996

March
ACTA proposes ban on 'Net telephony until ISPs pay access fees.

May
FCC rejects all proposals for ISP access fees for the time being.

December
FCC requests e-mail comment on fees, gets nearly 400,000 oppositions.

1997

March
Pacific Bell proposes special 1 cent-per-minute access rate for ISPs.

October
Senators press incoming FCC Chairman Kennard to reconsider issue.

November
ACTA asks federal court in St. Louis to overrule FCC decision.

ACTA's filing accused the FCC of "indefensible pandering to a powerful and vociferous political group" by retaining the ISP exemption.

Helein said the statement refers not just to ISPs but to hardware and software companies such as IBM, Netscape Communications Corp. and Microsoft Corp., which have convinced the Clinton administration to take "a Holy Grail attitude toward the Internet."

RBOCs have made similar though less strident appeals to the St. Louis court, said Colleen Boothby, a Washington, D.C., attorney for the Internet Access Coalition. The St. Louis court, also known as the 8th Circuit Court of Appeals, previously has overturned two other major FCC actions implementing the telecom reform law.

"I think it will get a serious hearing," Boothby said. "The 8th circuit is the RBOCs' favorite court." The Internet Access Coalition, which happens to represent IBM, Netscape and Microsoft as well as others, will file a brief on Dec. 29 backing the FCC's position, Boothby said.

ACTA's latest action also puts some of its own members in a ticklish position. At the time ACTA made its first move, one of its largest members, WorldCom, Inc., did not provide Internet access service (*NW*, March 11, 1996, page 6). Now it is one of the largest ISPs because it owns UUNET Technologies, Inc. following the 1996 acquisition of UUNET parent MFS Communications Co.

Helein confirmed that WorldCom tried to dissuade ACTA's board from bringing the court action, but the board proceeded to do so anyway.

Revealing the split, ACTA's court filing conceded in a footnote that WorldCom "chose not to participate in this filing." ■

Users get tools to watch over Web

By Denise Pappalardo
Santa Clara, Calif.

InterNex Information Services, Inc., a national Internet service provider, is putting the power of information into the hands of its customers.

InterNex is expected this week to announce WebMeasure software packages, which will let customers monitor usage and performance of InterNex Web hosting and colocation services.

WebMeasure packages run on InterNex's servers and monitor Web server or related activities: usage, performance, link utilization, network utilization and systems or device activity.

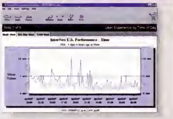
The usage monitoring and reporting package is based on software from Internet Profile Corp., which lets users measure the number of hits on their servers per day, week or month.

The performance reporting package was developed by Keynote Systems, Inc. and InterNex. The software lets users request reports on route trip times.

For instance, a customer could measure how long it took users in Chicago to download information off a server hosted in New York. The performance reporting package can be set up to test trip times every 15 to 30 minutes.

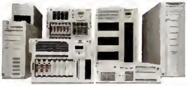
The link utilization package is based on Technically Elite, Inc.'s Remote Monitoring specification products, said Rick Eisener, vice president of sales and marketing at InterNex. This WebMeasure component lets users monitor the input and output of any device, such as their Web server, router or switch, at the ISP's Web server farm. WebMeasure's network utilization reporting software is a home-grown package, Eisener said.

Performance reports


InterNex gives its Web hosting and colocation customers the power of information with its WebMeasure monitoring tools. Here is an example of its usage and performance tool, which will let customers monitor how fast Web surfers are receiving their requested information.

The software tool will give customers information about

See WebMeasure, *page 36*



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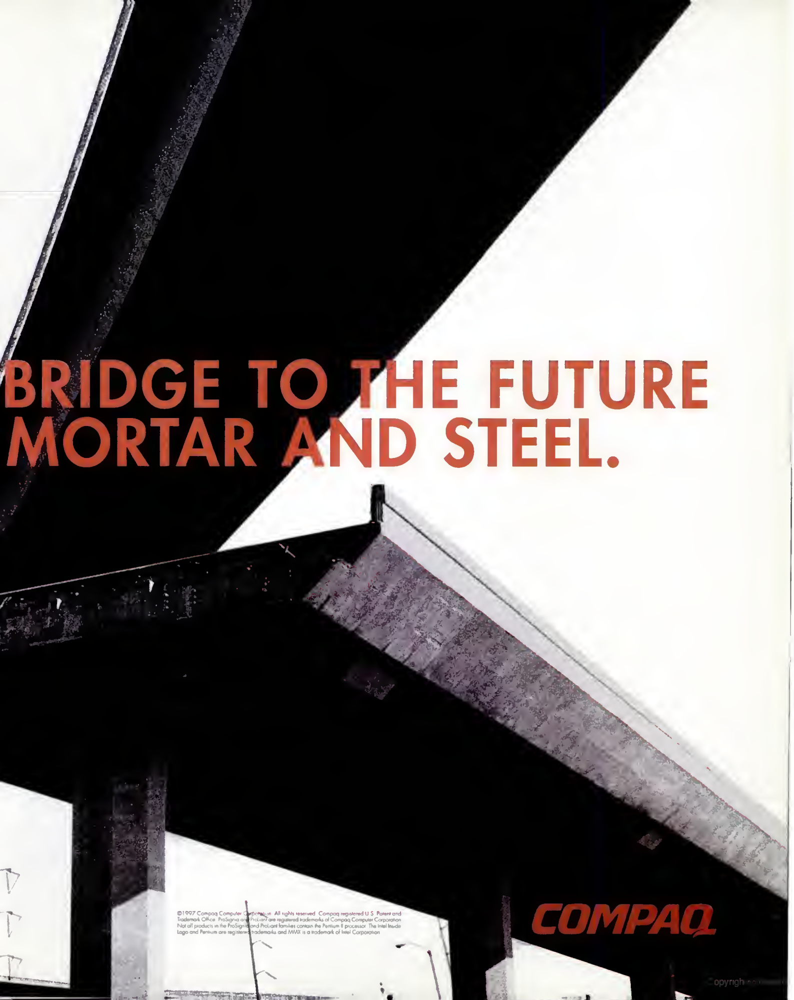

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Licenses for 'Internet in the sky' questioned

By David Rohde

Washington, D.C.

A political donation by wireless pioneer Craig McCaw is sparking a controversy over wireless licenses awarded to a new Internet access company controlled by McCaw and Microsoft Corp. Chairman Bill Gates.

House Commerce Chairman *Bliley*

House Commerce Committee Chairman Thomas Bliley (R-Va.) recently wrote Federal Communications Commission Chairman William Kennard asking why the McCaw-Gates venture, Teledesic Corp., was given 18-GHz spectrum without bidding for it in an auction.

Teledesic's planned self-named broadband system will involve 288 low-earth orbit satellites providing global Internet access. It received spectrum last March in an FCC ruling requiring it to pay an unspecified sum to Teligent Corp., another emerging wireless access carrier that held competing 18-GHz licenses.

The move has raised questions for three reasons:

- A McCaw-controlled holding company gave $50,000 to the Democratic National Committee in September 1996, five weeks before the presidential election.
- Other carriers have sought space in the 18-GHz band or the 24-GHz band, where Teligent relocated under the settlement.
- There were no auctions of the licenses or opportunity for public comment before they were awarded.

Teledesic's operations are just getting ramped up, with no satellites launched yet and service not expected to begin until 2002. Still, the project promises to provide users far more ubiquitous broadband Internet access than typically is available today, with standard connections of up to 2M bit/sec (*NW*, Sept. 8, page 30).

The FCC has contended it needed to clear space in the 18-GHz band by moving Teligent to the 24-GHz range because of national defense considerations. Too many competing users in the 18-GHz band would pose national security problems because part of the available space is used by government earth stations in Denver and Washington, D.C., the FCC said.

But Bliley questioned the FCC's reasoning. In his letter, he asked Kennard to cite other instances of moving around large amounts of spectrum due to national security considerations. He also asked why the 24-GHz spectrum awarded to Teligent was not opened for auction.

Larry Williams, director of external affairs for Teledesic, said the FCC felt that because the spectrum relocation was deemed a matter of national security, it did not require a comment period or auction. The FCC spent three years in an earlier public rule-making determining what frequency bands to place low-earth orbit satellite operations in, Williams added.

Bliley also addressed his questions to Assistant Commerce Secretary Larry Irving. The Commerce Department's National Telecommunications and Information Administration plays a large role in spectrum licensing. ■

WebMeasure

Continued from page 33

packet loss across interexchange points, Eisener said.

While these would be exceptional cases, it is an important tool for large customers, such as PointCast, Inc. Companies like PointCast use InterNex's services to ensure the connection to the Internet is not clogged, Eisener said.

The systems/devices monitoring and reporting package lets customers determine CPU utilization, slot capacity, disk space or memory utilization. This WebMeasure package also was developed by InterNex.

Global interface planned

Early next year, InterNex is planning to roll out a single interface for all of the WebMeasure client software packages. Today, if customers want all five software tools, they have to open each package individually.

WebMeasure is available now for $50 to $600 per month, depending on the combination of packages that companies choose.

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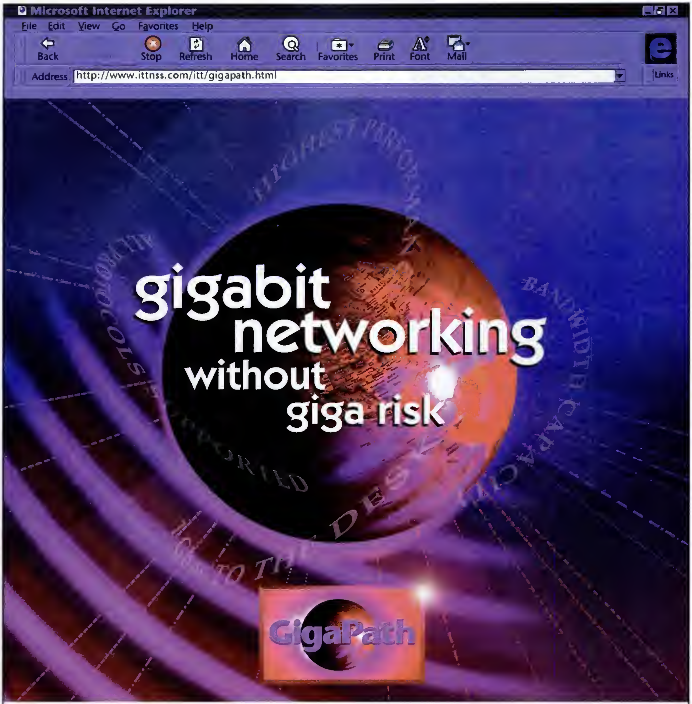
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WAN MONITOR

The great Internet fax misnomer

Fax is a huge expense, and it's growing. In fact, fax makes up 25% to 40% of long-distance bills.

Lots of money is being poured into research and development to create new products geared toward getting around the expense. Internet fax is one such effort.

But we really hate the term "Internet fax." It's a huge misnomer. Most fast, reliable Internet faxing is done over a carrier network. That makes it more of an intranet because no internetworking is taking place. Only the faxmail vendors that send faxes as e-mail attachments are really attacking the Internet fax arena for cross-carrier transmission.

Internet fax also substantially downplays what really is happening in the fax industry. We prefer to talk instead of "data-enabled fax." It doesn't sound as sexy, but it is far more accurate. By data networks we mean frame relay, ATM, X.25, virtual private networks and others. The data enablement of fax is one of the big sleeper trends sneaking up on us. Today you have printers on your LAN. You have scanners. You have modems. But you don't have fax machines, because they are on the public switched telephone network (PSTN).

Fax, as an application, belongs on data networks for lots of reasons, and fax manufacturers are just starting to realize this. Expect to see fax machines with onboard Ethernet connections soon (*NW*, Nov. 3, page 35).

Let's look at Ericsson's "Line Doubler" central office capability. The vendor marries an Internet telephony gateway to a central office (CO) switch. With Line Doubler, Ericsson allows the user to maintain a full-time dial-up or dedicated connection into the telephony gateway. When someone calls the user's phone number, and it's busy because the user is online, the CO will call forward/busy that call to the telephony gateway. Then the voice call can be completed over the IP connection. This feature gets you two lines — Internet access and a regular phone line — for the price of one. Eventually you'll see this capability from all the CO vendors.

Daniel Briere and Christine Heckart

We're not so sure everyone is going to flock to a service based on this just for telephony, but for fax it makes huge sense.

What this means is that fax machines can seamlessly coexist over the PSTN and Internet. Inbound faxes from nonconverted fax machines can still use the PSTN to establish real-time connections that merely terminate over the IP connection.

For outbound faxes, the smarts on the inside of the machine coordinate which messages go where, all controllable from a local keyboard or via remote Web-based management tools. Fax numbers are converted to IP addresses or e-mail addresses and sent on their way. An RJ-45 connection on the fax machine allows LAN access as well, so you can use your already-paid-for data network.

Sound like any other computer device? Yup, that's the point.

Briere is president and Heckart is vice president with TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at dbriere@telechoice.com and checkart@telechoice.com.

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Briefs

Security vendor **Axent Technologies, Inc.** *of Rockville, Md., has purchased firewall security vendor* **Raptor Systems, Inc.** *of Waltham, Mass.*

Under terms of the $250 million stock deal, Axent will offer 0.8 shares for each share of Raptor stock.

The acquisition represents the continuing **consolidation of the security market** *as customers increasingly look for one-stop shopping and as larger vendors such as Microsoft Corp. and Cisco Systems, Inc. release their own products. Roptor will operate as a division of Axent.*

Electronic commerce start-up **Open Market, Inc.** *of Cambridge, Mass., on Wednesday will unveil* **Internet publishing software** *made by its Folio division. The product, siteDirector, was developed by* **Folio Corp.,** *a publishing software company purchased by Open Market last February.*

The new version, siteDirector 4.1, is designed to allow corporations to publish information on the World Wide Web in HTML and features natural language searching and relevancy ranking. It runs on Windows NT 4.0 and will be available at the end of December for $4,995.

✆ Open Market: (800) 543-6546

Microsoft Corp. has released an **upgrade** *to its* **Internet Explorer 4.0** *browser designed to fix several known bugs. Internet Explorer 4.01 eliminates an installation glitch that caused PC screens to go blank after the browser was installed and the user's system rebooted, Microsoft officials said.*

It also speeds performance by resetting a default for the "dragging windows" feature that users said was slowing down their machines. The upgrade is available on the Microsoft Web site at www.microsoft.com.

Octel ships unified messaging for Exchange users

Voice messaging ystem requires specialized installation, including PBX integration.

By David Rohde
Milpitas, Calif.

The nation's voice mail king has delivered on its promise to put voice messages in Microsoft Corp. Exchange mailboxes.

Now the Octel Messaging Division of Lucent Technologies, Inc. will have to wait and see whether users are interested in paying about $200 per seat more than their existing e-mail and voice mail installations for a unified messaging system.

The company last month began shipping Octel Unified Messenger. Announced early in the year, the system is a Windows NT messaging server that acts as an adjunct to a LAN-attached PBX (*NW*, Feb. 24, page 29).

The server encodes voice messages in digital format and ships them over the LAN to a user's Exchange mailbox. Via digital signal processing, it also is can translate remote touch-tone instructions into typical e-mail messaging instructions such as forward, reply and delete.

As a result, users can call up and manipulate all their voice and text messages via Windows or a telephone, with the capability of hearing text messages translated to speech and responding to one type of message with a different type of message. "Our work force particularly likes the ability to listen to its e-mail messages over the telephone," said Kelly Walls, vice president of information technology at Atlanta-based insurance company Royal Specialty Underwriting, Inc., an early customer of Octel Unified Messenger. "It dramatically improves our employees' productivity when they are out of the office."

Finding an installer

Octel faces some distribution challenges because it is not offering a turnkey package. Instead, Octel ships the system components — including server software and the Display Systems Protocol card — to specialized value-added resellers known as Octel Solution Alliance Members (OSAM). OSAMs then load the components on a Pentium server of the user's choice.

There are only about 12 such installers around the country right now, mostly because the OSAMs must know how to integrate the system with PBXs and desktop office suites. "It gets pretty complex," said Frank Bell, president of IntelliNet Corp. of Atlanta, one of the first OSAMs and the installer at Royal Specialty.

Bell does not expect customers initially to install Octel Unified Messenger throughout the enterprise. Instead, customers will consider it for users who frequently call from the road and may find the telephone an easier means of accessing e-mail than hunting for a wire-line laptop connection.

Analysts attribute the relatively slow growth of unified messaging to users' reluctance to spend sums beyond their already installed voice and e-mail systems. And Bell said Microsoft is not pushing Octel Unified Messenger or earlier Exchange mailbox integration schemes from voice-mail vendors such as Active Voice Corp. or Applied Voice Technologies, Inc.

Instead, Lucent is expected to provide the first broad-based push for unified messaging. Lucent completed its acquisition of Octel — previously its leading voice-mail rival, particularly for large users — in September.

✆ Octel: (408) 321-2000

About $200 per head to unify messages

Sample pricing for a 100-user installation of Octel Unified Messenger:

Four-port Rhetorex voice and DSP card for Unified Messenger server*	$1,930
Server software license at $1,760 per port	$7,040
Two text-to-speech channels at $880 per channel	$1,760
Client license at $90 per user	$9,000
PBX integration	$1,180
TOTAL	**$209.10 per user or $20,910**

* Assumes each port supports 25 users. Port requirements vary according to levels of messaging traffic.

NOTE: Server hardware not included. System requires 133-MHz Pentium server running Windows NT

QUICK TAKE: THE JAVA ECONOMY

Java market still in infancy, surveys show

By Chris Nemey

Java is being billed as a technological tsunami that will roar through the IT landscape, forever changing how corporations run their networks and, in the process, creating a multibillion-dollar market for software vendors.

But in terms of revenue generation — otherwise known as the bottom line — the Java tidal wave today is little more than a trickle.

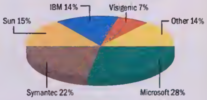
In its recent report *Java: Markets, Opportunities, and Trends*, Zona Research, Inc., of Redwood City, Calif., estimated total revenues for Java vendors in 1997 at $58.9 million, with five vendors splitting 86% of that amount (see pie chart).

"The Java market today is driven entirely by the sale of Java development tools," said Ron Rappaport, a Zona analyst. Perhaps surprisingly, Java creator Sun Microsystems, Inc. ranks only third in 1997 Java revenue, Zona reports. Sun trails Microsoft Corp. and Symantec Corp., the maker of Visual Café for Java, a popular application development tool.

So does all this mean Java is destined to be an overhyped flop? Not likely. Rather, these relatively modest figures reflect a technology in its earliest stages of adoption, according to International Data Corp. (IDC), a Framingham, Mass.-based consultancy.

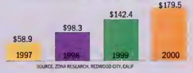
"The degree of utilization of Java among U.S. corporations is still in its infancy," IDC analysts wrote in a recent bulletin. The bulletin details the results of a survey showing that more than 60% of U.S. companies still are evaluating Java technology, with none reporting widespread deployment (see bar graph, bottom right).

Vendors by 1997 Java revenue



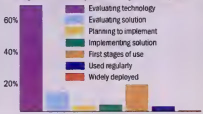
Based on an estimated market of $58 9 million.
SOURCE: ZONA RESEARCH REDWOOD CITY, CALIF

Java market projections (in millions)



SOURCE: ZONA RESEARCH, REDWOOD CITY, CALIF

Stages of Java adoption among U.S. companies



Based on a survey of 798 IS managers. SOURCE: IDC FRAMINGHAM, MASS

'NET INSIDER

Prognostication as a business

We put up with a lot of guessing in this business of technology. Much of the guessing is wildly, sometimes laughably, wrong. But occasionally someone gets it right; Moore's law has been one of those cases. Gordon Moore's 1965 prediction that transistor density of semiconductor chips would double roughly every 18 months has proven remarkably accurate.

It is this type of prediction that makes us so gullible for the predictions we get on a daily basis from all corners of the technology consulting world. To see how bad things can get, take a look at the predictions over the past five years about ISDN deployment. It would appear that the records of the major consulting firms are rarely blemished by accuracy. Why, in the face of this, do these consulting companies continue to do so well financially?

Once upon a time, some technology prediction was easy and produced reasonably exact results. For example, for decades telephone companies were able to predict the growth in the demand for telephone numbers by looking at birth rates and building permits. This has fallen apart. The development of new applications has invalidated the old assumption that there would be a need for one telephone and one telephone number for each housing unit and employee. Cellular phones, fax machines and the Internet have changed the picture to a point where the predictions of future trends that accompany the ever more common requests for new area codes hardly outlive the transition to the new codes.

New applications can limit the reliability of predictions, but the most egregious mispredictions do not seem to fit this model. In 1995, one company in the technology forecasting business estimated there would be 4.5 million ISDN lines installed by the turn of the century. This year, the same company predicts that the number will be about 3 million. They now have reduced expectations in spite of the fact that, instead of being viewed as a fancy telephone replacement, ISDN is now viewed as an Internet access pipe and usage is increasing. The cause of the inaccuracy in this particular case is easy to find; the predictions did not adequately take into account the perfection of incompetence found in the pricing departments of telephone companies.

Scott Bradner

A common thread in many technology predictions is wildly optimistic predictions about the adoption of new technology. For the past five years, most of the predictions had the ATM market approaching $10 billion per year within five years. These predictions have been a constant — only the target year has changed, receding into the future at about the same rate as time. There are many reasons that the predictions have been wrong, but the fact remains that accurate predictions of the acceptance of ATM technology have been few indeed.

There seems to be some deep need for humans to know their future even when their experience is predictions are commonly wrong. I predict that, despite the fact that the only thing one can accurately predict about professional prognostication is that the result will be inaccurate, this will remain a profitable business.

Disclaimer: The best predicting at Harvard is done in the history department, but the above is my own.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

Headline:

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Product name: WEB Ranger

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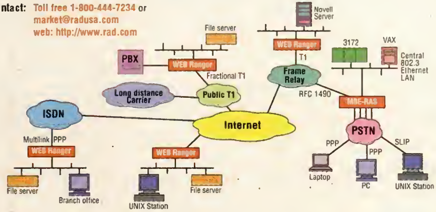

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Web server manager debuts

Site detective software shakes down servers.

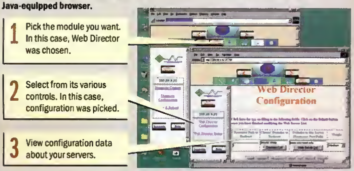
By Andy Eddy
Ottawa

Police departments promise "to protect and to serve." WindDance Networks Corp.'s WebChallenger software vows to police and protect your Web servers.

WebChallenger — which runs on Windows NT 4.0 yet safeguards any kind of server — is a new Web maintenance tool that helps oversee and manage a Web-based network from the next room or the next state.

WEBCHALLENGER SAFEGUARDS SERVERS

Information from WebChallenger can be accessed by a Netscape, Microsoft or any Java-equipped browser.



1 Pick the module you want. In this case, Web Director was chosen.

2 Select from its various controls. In this case, configuration was picked.

3 View configuration data about your servers.

The Standard package, which can handle up to 10 stand-alone servers, contains six components, including:

- Web Alarm, which monitors the network and alerts the administrator of a problem by e-mail or pager.
- Web Verify, which provides verification of Web site content, makes sure there are no broken links in the site's documents, uncovers orphan files taking up unnecessary space, maps out the directory structure and provides error reporting.
- Web Benchmark, which emulates multiple client accesses, then determines the throughput of the servers for performance analysis.
- Web Diagnostics, a Java-based program that operates like a network sniffer and scans the enterprise for problems that may affect performance.

The Distributed package contains another component that handles load balancing of servers in more than one location. It can automatically shift users to a server with a lighter load.

WebChallenger can distribute hits based on a server's ability to handle the load: If two servers are available for a particular application, and Server A can deal with twice as many hits as Server B, Server A will have twice as much traffic routed to it.

Get more online:
- Buyer's guides and reviews for Web authoring tools and Web content managers
- A review of load balancing software for heavy-duty Web sites

www.nwfusion.com

One of the major benefits of WebChallenger is that all components of the package can be accessed from a browser, which provides one interface for error reporting and analysis, and makes these functions available from a remote location.

"The whole product is Java- and HTML-based, so you see everything that's happening from the browser," said Albert Sheynzon, a product manager at WindDance. "All reports are in HTML format with links that will take you to the page generating the error," he said.

The Standard Web Challenger package is $1,800 per server, and the Distributed package costs $2,200 per server. Both packages are available now.

✆ WindDance: (613) 728-1700

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DRDA 2.0
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XPG4 (Base Subset)
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Technology Update

Covering: Evolving Technologies and Standards

NUTTER'S NETWORK HELP DESK

Ron Nutter, a Master Certified Novell Engineer and Groupware CNE in the Lexington, Ky., area, tracks down the answers to your questions. Call (800) 622-1108, Ext. 476, or send your questions to rnutter@world.std.com.

I loaded Novell, Inc.'s IntranetWare Client for Windows 95 on several PCs. It seems to be working great, except on an IBM PC that has the old Client 32 for Windows 95 and is running IBM's Client Access V3R1M2 for 95/NT. When the PC boots, it gives me the IntranetWare logon and runs the logon script. But then the hourglass appears and just hangs.

I can still move the mouse around, but the keyboard is dead; I can't use the Escape key or do a Control C or access the Task List. I did remove the old Client 32 via Novell's uninstall program. I have tried four machines, and none of them will load the IntranetWare Client for Windows 95 and the IBM Client Access.

Do you think everything will work if I try the old Client 32 for 95?

Via NWFusion

You should be able to run the older client with the V3R1M2 version of Client Access. But you also should be able to resolve the software conflict between the IntranetWare Client for Windows 95 and IBM's Client Access.

First, make sure you've applied Service Pack 1 for Windows 95. You should apply the KRN-LUPD.EXE and OLE update files available from Microsoft Corp.'s World Wide Web site at www.microsoft.com/Windows95.

If you're connecting to your IBM AS/400 via a TCP/IP connection, you also may need to update the Data Link Control or WinSock drivers. You can get updates — SF42728 in your case — for IBM Client Access at www.as400.ibm.com/clientaccess/. IBM also plans to release an updated service pack.

While you are getting updates for Client Access, have your systems folks get the latest CUME tape for your AS/400 to keep it in sync with the version of Client Access you are installing at the client level. Hopefully, these steps will resolve the problem.

New technology tries to ease router bottlenecks

By Dick Kachelmeyer

The inherent design limitations of conventional, standalone routers are starting to show in the Internet and large IP networks.

While there are numerous variations in bus-based router designs, they all share a common weakness: slow next-hop route lookup. One solution is to use hardware, rather than software, to eliminate this bottleneck.

Ascend Communications, Inc. invented such a hardware-based offering, called Quick Branch Routing Technology (QBRT), for its family of multigigabit routers. QBRT, when combined with other high-performance design elements, allows the multigigabit router to forward packets at wire speed on a fully configured chassis under heavy traffic.

The fundamental design for the QBRT-based multigigabit router is a distributed architecture with parallel processing of a router's two main functions: packet forwarding and route table management.

Packet forwarding must occur in real time and requires a forwarding decision and the actual routing or forwarding of the packet. With QBRT, the forwarding decision is based on a full route table lookup to quickly and accurately determine each packet's next-hop route. Routing tables keep track of network destinations. Route table management is a process that helps users get a handle on the thousands of network routes that are available.

Individual media cards in the multigigabit router perform both packet forwarding operations. To attain the full potential of parallel processing, there is a separate data path for each card. This is achieved with a crosspoint switch that has a nonblocking path for each card in either a 4-by-4 or 16-by-16 matrix for a four- or 16-slot chassis, respectively.

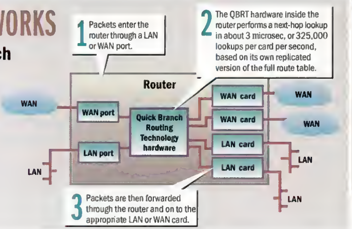
All four- or 16-slot bidirectional paths operate independently at 1G bit/sec, which means each path through the switch is able to accommodate multiple ports and today's fastest LAN and WAN media. The use of a crosspoint switching engine makes the design a true multigigabit router.

Each of the hot-swappable forwarding media cards in the QBRT-based multigigabit router is effectively a separate router. All cards contain one or more LAN or WAN ports; a forwarding table, which is a simplified version of the full route table; the QBRT hardware; packet-forwarding hardware; buffering capacity; and separate interfaces to the route manager and the switch engine on the control board.

HOW IT WORKS

Quick Branch Routing

Designed to ease the bottlenecks that can sometimes occur in heavily used routers, Quick Branch Routing Technology (QBRT) allows packets to be transmitted at wire speeds.



1 Packets enter the router through a LAN or WAN port.

2 The QBRT hardware inside the router performs a next-hop lookup in about 3 microsec, or 325,000 lookups per card per second, based on its own replicated version of the full route table.

3 Packets are then forwarded through the router and on to the appropriate LAN or WAN card.

Unlike QBRT-based routers, conventional routers employ a shared bus and central processing unit that handle all functions serially, rather than in parallel. The usual bottleneck in a conventional router is the relentless next-hop route table lookup for the constant stream of incoming packets. To keep pace, most conventional routers employ a cache of recently used addresses. If a packet's next hop is in the cache, the lookup is reasonably fast. But when cache hits drop to 50%, which is fairly common, the router's overall throughput can drop by as much as 90%.

The throughput limitation of conventional routers is causing a rather interesting self-destruct sequence in the Internet. With limited performance, the only way to increase the capacity of the Internet is to segment the network and add more routers. But the proliferation of routers creates scaling problems for routing protocols as the route tables become increasingly complex and unwieldy.

Exchanging large table updates consumes precious Internet capacity; processing them regularly knocks out some routers. When a router goes down, alternate routers come to the rescue, but at the expense of another route table update. This "route flapping" can bring any conventional router — and even entire segments of the Internet — to a grinding halt.

The QBRT hardware on each media card is fast enough to look up every packet's next-hop address on its own replicated version of the full route table, so there is no need for an address cache and the traditional routing bottleneck is eliminated.

Even with minimum-size packets, each with a different destination address, arriving at wire speed on a 622M bit/sec WAN interface, QBRT is able to keep up with the traffic. Specifically, the patent-pending QBRT hardware can determine the next hop in about 3 microsec in a table as large as 250,000 routes, or five times the size of those in today's Internet.

Because the route manager is able to quickly and concurrently update the replicated route tables, the packet forwarding process continues undisturbed. In this way, switch performance neither contributes to nor is hindered by route flapping.

Elimination of the next-hop route lookup bottleneck — even under worst-case traffic conditions — combined with the nonblocking 1G bit/sec forwarding paths allows the multigigabit router to achieve wire-speed performance in a fully loaded chassis on OC-12 lines operating at 622M bit/sec.

The main benefits of QBRT-based routers include a major improvement in price/performance over conventional routers, linear scalability as parallel media cards are added and greater port density in a more compact chassis.

Kachelmeyer is director of product marketing with GRF Ascend Communications Core Systems Division. He can be reached at (510) 769-6001.

Need information?

Let *Network World* provide a quick primer on an important or emerging technology. If you have an idea for Technology Update, contact Michael Cooney by phone at (508) 875-6400 or e-mail at michael_cooney@nww.com.

EDITORIAL *insights*

The next showdown: You pick the topic

Get ready to cast your vote below, but first, a bit of housekeeping.

A few weeks back, I challenged the top network and systems management vendors to participate in a special showdown session at the ComNet '98 conference in January.

The good news — and there's no bad news — is that all five have agreed to take part and they have already committed speakers for the event, which will be held from 12:30 to 1:45 p.m., Thursday, Jan. 29. (ComNet runs from Jan. 26 to 29 in Washington, D.C. Check out: www.comnetexpo.com/cn98/index.html.).

The contestants will be: Chris Oliver, chief technology officer, Cabletron; Yogesh Gupta, senior vice president of product strategy for Computer Associates; Martin Haworth, manager of solutions and support services with HP's OpenView Software Division; Stephen Borcich, director of product development for Sun's Network Software Group; and Tom Bishop, vice president of infrastructure development for IBM/Tivoli.

As with all our showdown sessions, our goal is to get beyond the marketing hype and get the vendors to answer tough questions from a panel of experts — each other and you. Our experts this time around are Kevin Tolly, president of the Tolly Group consultancy; Rick Villars, International Data Corp.'s top management guru; and our own Senior Editor Jim Duffy.

I've received mail from a number of readers offering suggestions on what to ask these vendors and whether we should invite another vendor. I'd like to hear your suggestions as well. Get to me at the e-mail address below.

While you're at it, cast a vote. We'll be doing a showdown session at the NetWorld+Interop '98 Las Vegas conference (May 4 to 8), and I want your advice on which of these ideas to pursue:

- Network computers (NC) vs. PCs. A face-off among the key vendors representing the NC and PC worlds. Which approach is most affordable? Manageable? Realistic?
- A frame relay showdown among the key carriers.
- A showdown on Java — is it ready for the enterprise?
- A messaging face-off — who has the best enterprise-class messaging/groupware solution?
- NT vs. NetWare: We pit the key vendors and some of their supporters against one another.
- A security debate. Which vendor is best positioned to solve your growing security problems?
- A showdown on Layer 3 switching solutions.

It will take just a minute to vote on these topics or to offer up another suggestion. So fire away.

John Gallant, editor in chief jgallant@nww.com

Intranet Advisor • Daniel Blum

Hidden directory costs: The industry's dirty little secret

The costs of maintaining directory information for multiple applications has long been one of the industry's dirty little secrets. We don't pay for directories upfront — they are almost always bundled with applications such as e-mail, personnel systems and Web-based products.

Consequently, we have allowed our companies to become directory backwaters with many stagnant ponds of duplicate directory information.

Fortunately, users are starting to catch on to the fact that directory costs are hidden in duplicate support requirements, lost productivity and missed opportunities for deploying applications.

The first layer of hidden directory costs stems from supporting systems that contain similar information. These are mainly "people costs" and include training, setup, configuration and administration. For example, entries for each user on the enterprise network might be found in an e-mail database (Daniel.Blum), the NOS directory (dblum) and a human resources database (Daniel J. Blum).

Each time a user entry is changed, some or all of the directories must be updated. A typical company of 5,000 users might make 1,000 personnel changes in a year. According to a cost model I developed, if the company updates just five directories for every user change, the tab comes to over $60,000 per year. For a company of 50,000 users, the damage is more than $600,000.

Invalid or out-of-date directory information creates even more hidden costs. If users cannot find one another in the directory, communication does not occur. Messages are lost, which leads to misunder-standings. New employees can't access the systems they need.

Security risks are incurred when a person leaves the company and logon IDs are not removed. In our hypothetical 5,000-person company, if just 10% of the directory changes lead to help desk calls and another 10% to administrative troubleshooting, add $25,000 to your annual directory bill. This doesn't include lost business or the effects of collateral damage to end users' productivity.

In addition to hidden costs, directory backwaters come with opportunity costs. When the company needs a new application, chances are the application will need a directory to manage users, routing, security, groups and other information. However, the manual effort required to support its directory interferes with deploying the application. Opportunities are lost when there simply isn't enough time or budget to enable applications.

What can you do? Be selective about the applications you buy. Choose applications that can work with industry-standard Lightweight Directory Access Protocol directories or popular network operating system directories such as Novell Directory Services.

While many vendors seem clueless about directory management, others — such as 3Com, whose TranscendWare uses LDAP to store policy information and automate device configuration — are quite proactive.

Get your company started on a directory consolidation project. There are many meta-directory and directory management products out there that may help (NW, Sept. 15, page 45).

Finally, the next time your CIO asks whether the company can afford directory progress, say the real question is whether it can continue to afford directory backwaters. Back up your argument with a simple business case, even if it's just a 20-line spreadsheet that uses parameters such as estimated administrator salary, time to change a directory entry, number of directories and number of user changes per year. This example will bring directory costs out into the open.

Blum is a principal at Rapport Communication, a consultancy that focuses on intranet messaging, directories and groupware. He can be reached at dblum@mindspring.com or www.rapport.com.

MESSAGE QUEUE

Send letters to nwnews@nww.com or John Gallant, editor in chief, Network World, *161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.*

Stolen spectrum

Regarding your article "Let that spectrum free" (Nov. 10, page 61):

The Federal Communications Commission has been selling stolen goods. The spectrum doesn't belong to the government — it is a universal, finite resource, and selling it is about the same as selling air or water in the ocean.

The chunks of the spectrum that were sold should have been leased for some period of time. The FCC could have made some money and still retained ownership of the band.

Your article points out that some speculators bought frequencies only to turn around and sell them off, while others

The Blue View • Anura Gurugé

Java changes IBM's network view

IBM's current addiction to Java, as exemplified by its Grand Central Station initiative (*NW*, Nov. 10, page 1) and positioning of the AS/400 as a Java megaserver (*NW*, Nov. 17, page 1), indicates Big Blue's view of the future of networking and computing in general. The Java efforts are just one facet of IBM's overall attempt to seamlessly integrate the World Wide Web, as well as the intranets and extranets spawned by this technology, with traditional enterprise information systems — particularly conventional data centers.

Having watched the late '80s client/server phenomenon that was supposed to make mainframes obsolete go awry, IBM is now assiduously working on a new client/server revolution. This time around, the Internet and intranets, not hardware platforms, will be the focus of application reengineering and new application development efforts.

In effect, IBM yet again is redefining how we look at computing vis-a-vis networking. Big Blue appears to be taking Sun's famous adage "The network is the computer" to the next logical conclusion: "The network is buried inside the application," with the network now being the Internet or an intranet or extranet. While this may seem obvious or even trite to some, it is going to mark a major rite of passage for most of the IBM networking community.

Over the past couple of years, IBM has been preoccupied with sustaining SNA traffic across multiprotocol networks and increasing the bandwidth available for that traffic.

For example, just a few months ago, there was a major hullabaloo in this arena. The question was whether IBM's new channel-attachable 2216 bridge/router was faster than a Cisco router with a Channel Interface Processor for transporting SNA traffic across a mainframe channel using Advanced Peer-to-Peer Networking or High Performance Routing.

In IBM's new Web-centric application and networking approach, such hardware issues will be considerably less important. IBM will promote application-level, industry-specific, integrated end-to-end systems, with the focus on the business needs and ramifications of the application rather than the network plumbing.

This network-neutral computing model is somewhat commonplace outside the IBM arena. In IBM shops, however, the SNA network often gained more attention than the applications that justified its existence. This network-dominant view is about to end.

This is good news for end users who care about the applications they have to deal with, not network-related Layer 2 and Layer 3 issues. Today, nearly all midsize to large enterprises with one or more mainframes have an MIS department that deals with data center issues and a network department that takes care of the network. In IBM's new approach, the distinction between these two groups is going to blur as the network loses some of its complexity, particularly in terms of the need to support multiple disparate protocols.

Now is a perfect time to take a breather and smell the Java in terms of how the IBM computing scene is going to evolve. Client/server is back again, but this time, it's Java empowered and Internet flavored. However, this does not mean mission-critical SNA applications, which have over the years cost enterprises around the world in excess of $20 trillion, are going to become obsolete any time soon.

Instead, IBM, Lotus and Microsoft, and others, will ensure SNA applications become data feeds to new Web-enabled applications. Between IBM and Lotus, the firms already have a bewildering array of often overlapping program-to-program solutions for Web-enabling existing SNA mission-critical applications. And another product, named ResQNet, was introduced last month as part of IBM's eNetwork software program.

These programmatic solutions complement IBM's terminal access-oriented Host-on-Demand product, which allows PC users to access SNA applications from a standard Web browser. At last count, there were at least five discrete IBM programmatic solutions to integrate IBM's widely used CICS transaction monitor with Web-based applications. These include the CICS Gateway for Java, which permits Java applets to interact directly with CICS applications. There are similar Web-to-data center gateways for all of the other major mainframe applications.

While it would be preferable to have a single Web-enabling solution that can work with all mainframe applications, rather than these application-specific schemes, the message IBM is imparting is loud and clear. Big Blue is committed to a Java-driven client/server model in which today's existing mission-critical applications, with their user-hostile, green-on-black, 3270-based user interfaces, become easy-to-tap data feeds to a new genre of highly graphical, browser-front-ended applications accessed across the Internet or intranets.

The IBM community is at a crossroads. Moving forward, the network, rather than being viewed and nurtured as a separate, special entity, will become much more integrated with the end-to-end applications. This will be a gradual process. But now is the time to start thinking about how this shift from network centricity to application centricity will affect your company and how you need to react to it.

Gurugé is an independent consultant who specializes in internetworking and IBM network architectures. He can be reached at (603) 279-5596 or guruge@cyberportal.net.

haven't done anything with the ones they have. Imagine the incentive these companies would have to get something up and running if they were told that they have only so long to show some results before their lease is canceled and the frequency is given to someone else.

All other services using the spectrum are assigned to frequencies that may be revoked at any time and given to another service that will make better use of them. This policy has kept the U.S. at the forefront of communications technology. The "sold" bands have been lost forever.

Tony Podrasky
Network specialist
Convex Corp.
San Diego

It's telewelfare

Your article "FCC chief faces ISP access fee issue" (Nov. 10, page 17) states: "[Sen. Ted] Stevens said he was concerned that exempting Internet traffic from [per-minute access] fees would rob phone companies of revenue needed to provide universal telephone service to all consumers."

What a load of horse manure!

Stop a minute and look at your long-distance and cellular telephone bills. A 10% so-called universal service tax is confiscated on every dollar. Also note all of the additional state, local and federal taxes already included. We are talking millions and millions of dollars.

Just what is universal service? It's telephone welfare. Money is taken from hard-working people and businesses and redistributed to those who supposedly qualify for free or subsidized telephone service.

Universal service needs to be exposed for what it is and eliminated.

Brian Litzenberger
Garden City, Kan.

OS/2 deserves coverage

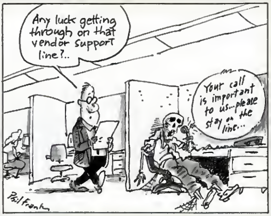
I enjoyed your article "New tools boost NT" (Nov. 17, page 17) and agreed with its basic points. As one who has had to migrate a department to NT, I can testify firsthand to its lack of security, poor performance and frequent lockups.

One thing your article didn't mention is that Warp Server, which my organization still uses in mission-critical environments, is faster than NT and much more robust and secure right out of the box. For these reasons, I'm trying to convince my management to go back to Warp Server. Our support costs have jumped a huge amount since we migrated to NT. I would appreciate more balanced coverage of all network operating systems, not just NT and Unix. IBM must be doing something right with OS/2, otherwise it wouldn't be winning $1.8 billion contracts with Bank of Brazil and the Chinese government.

Steve Mechling
Colorado Springs

GO ONLINE to read more letters to the editor. 5013

Teletoons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Phil Frank

Phil Frank and Joe Troise babs@sfgate.com

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High Speed Remote Access Solutions with xDSL will assist service providers, network managers, system integrators and end users in the assessment of this revolutionary new broadband access technology. This one-day seminar is taught by leading xDSL consultant Beth Gage of TeleChoice, Inc. The seminar will provide a thorough analysis of the emerging xDSL technologies and how they will compare to tried and true remote access solutions like ISDN and analog-dial up.

In addition you will learn the difference between each of the xDSL offerings, which applications they support and when they may be available in various service areas. Find out how xDSL differs from today's remote access service offerings and which xDSL-enabled services will be offered first and from whom.

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FEATURE

A TELECOM CASE STUDY: SBC ILLUSTRATES HOW RBOCS ARE THWARTING COMPETITION.

Stall tactics

MITCH O'CONNELL

Continued from page 1

"It wasn't an intentional act of destruction certainly, but the Bell employees wouldn't have treated their own equipment like that," says Eric Artman, assistant vice president of regulatory affairs for WorldCom, Inc., who worked for MFS when it was acquired by WorldCom late last year.

This example, while obviously extreme, points to the negligence and even incompetence that competive local exchange carriers (CLEC) face when trying to make incumbent local exchange carriers (ILEC) live up to the spirit of the Telecommunications Act of 1996 (see story, page 50). But in many ways, it's not as bad as the seemingly endless legal wrangling that has made it impractical, if not impossible, for some competitors to enter certain regional Bell operating company territories.

It's like a high-stakes game of chicken. The RBOCs can't get into the $80 billion long-distance market until their local markets are sufficiently competitive. But they are loathe to make it too easy for competitors to muscle in on their monopolies.

"The [RBOC] game is to do as little as possible to get the standard for getting into long distance as low as possible," says Anne Bingaman, the former U.S. attorney who presided over the 1993 Microsoft Corp. antitrust case. She is now senior vice president of LCI International Telecom, Inc., a CLEC in McLean, Va.

The problem points to the need for the Federal Communications Commission to work more closely with local regulatory bodies to streamline the negotiation process for RBOCs and CLECs, as *Network World's* three-part "Examining the FCC" series last month showed. Stronger oversight and sanctions would be in order for those ILECs that don't live up to the rulings intended to foster competition.

A good place to start would be with SBC Communications, Inc.

SBC, more than any other RBOC, uses a phalanx of lawyers and millions of dollars in lobbying efforts in a deliberate effort to thwart meaningful competition in its markets, according to a cross section of start-up CLECs, established long-distance giants, industry analysts and regulators. The litany of CLEC accusations against SBC also includes refusal to honor signed interconnection agreements, pulling circuits off the market to prevent Internet service providers from testing high-speed data lines, and threatening legal action to frighten users from doing business with competitors (see story, page 52).

CLECs have at least some of these problems with all RBOCs, but it is SBC that angers them most.

"SBC is an order of magnitude harder to get an interconnection agreement with than any other Bell," says Martin McDermott, senior vice president of marketing for American Communications Services, Inc., a CLEC in Annapolis Junction, Md. "Their attitude is 'Let them eat cake. We're not going to do anything we don't have to do.' "

Consider that in April this year, the California Public Utilities Commission (PUC) gave Pacific Bell an interim go-ahead to offer tariffs for services through which competitors could interconnect with its network. In August, before the PUC could give final approval to the tariffs and services, including terms for the physical colocation of competitors' switches in its facilities, the company withdrew its filing.

Why the about-face?

"After Pacific Bell was acquired by SBC, all of a sudden it got harder to do physical colocation. They said they didn't have enough space," WorldCom's Artman says. When WorldCom suggested a tour of switching facilities to check out

See Stall tactics, page 50

NOTHING'S EASY

Milestones in TCG's attempt to get a final interconnection agreement with SBC in Texas:

Feb. 8, 1996: On the date the Telecommunications Act of 1996 is signed, TCG sends a letter to SBC saying it wants to negotiate. Negotiations on six issues later fall through.

July 17, 1996: First arbitration hearing in front of Texas PUC. PUC decides to consolidate arbitration between SBC and carriers, including TCG, MCI, AT&T, MFS and ACSI.

Nov. 8, 1996: PUC releases consolidated arbitration decision with general guidelines and an interim decision on rates.

Nov. 19, 1996: TCG and SBC file agreement with PUC, after turning guidelines into contract language.

1996

1997

Jan. 20, 1997: PUC approves signed agreement between TCG and SBC.

Feb. 20, 1997: SBC files individual case-based (ICB) tariffs for physical colocation, disregarding PUC orders to file more general tariffs.

April 21, 1997: SBC appeals PUC-arbitrated interconnection agreement in state and federal court. State throws appeal into federal court in front of Judge Sam Sparks, in Austin.

Oct. 8, 1997: SBC drops appeals of PUC decisions that awarded TCG certificates to offer local services, but not its appeal of the interconnection agreement.

Currently: Judge Sparks' decision on the interconnection agreement case is pending, and SBC has threatened further legal action on pricing issues. The issues could go to appellate court in Texas and, theoretically, to the U.S. Supreme Court.

Legal cost to TCG: Anywhere from $250,000 to $400,000 to litigate the Texas interconnection issues alone, according to Hank Levine, a Washington, D.C. lawyer specializing in telecom contracts for major corporations. In addition, TCG had expenses related to SBC appeals regarding the certificates to offar local services in Texas. TCG declined to comment on costs.

Continued from page 48

potential spaces, he says Pacific Bell declined.

The legal hurdles SBC puts in front of would-be competitors are perhaps the most daunting, CLECs say.

SBC in July issued what is perhaps the main federal legal challenge to the telecom act. The suit charges that provisions of the act outlining criteria the RBOCs must meet before they will be allowed to offer long-distance service constitute a "special burden" that is unconstitutional. The suit is still pending in U.S. District Court for the Northern District of Texas.

SBC also joined other RBOCs in two major lawsuits in the 8th U.S. Circuit Court of Appeals in St. Louis, successfully challenging the FCC's authority to set pricing for interconnection agreements between RBOCs and CLECs.

But turf battles between CLECs and SBC are fought mainly at the state level. CLECs need to get certified to offer services by public utilities regulators, and sign interconnection and resale agreements with RBOCs on a state-by-state basis.

The $25 billion SBC offers local phone service in seven states, from the Mississippi to the Pacific, through its Southwestern Bell Corp., Nevada Bell and Pacific Bell units. For CLECs, simply getting agreements with SBC that let them do business in this area is a tortuous process, especially in Texas, the home state of Southwestern Bell, the company that has grown into the current SBC.

Last year in Texas, for example, after SBC-CLEC negotiations for interconnection agreements broke down, the state PUC arbitrated interconnection agreements. SBC signed these arbitrated agreements — typically taken as a sign that a party agrees to the terms. But SBC ignored PUC orders to file related tariffs, then appealed the agreement altogether, according to lawyers still arguing the cases.

Because of such maneuvering, in Texas alone, CLECs are spending hundreds of thousands of dollars each, at the most conservative estimates, to finalize SBC interconnection agreements (see graphic, page 49).

"Fifty thousand dollars is high but in line for physical colocation, but SBC wanted half a million dollars for a 10-by-10-foot space."

Manning Lee,
Teleport Communications Group

SBC has filed at least nine lawsuits in Texas, not counting identical suits filed in different courts that were later consolidated. SBC dropped seven of these cases recently after an FCC order preempted local law, but one of the two remaining suits is a case that consolidates, in two different courts, SBC's challenge to signed, arbitrated interconnection agreements with five separate CLECs.

Despite repeated requests over a nearly two-month period, SBC would not say how many cases it has filed in state courts in all the states in which it operates.

But the obstacles SBC creates are not just legal, the CLECs say. One reason interconnection agreements had to be arbitrated in the first place was because of the tariffs SBC wanted to charge for unbundled network elements, physical colocation setups and lines for resale.

"Fifty thousand dollars is high but in line for physical colocation, but SBC wanted half a million dollars for a 10-by-10-foot space," says Manning Lee, chief counsel for Teleport Communications Group (TCG), a competitive carrier in Staten Island, N.Y. By comparison, NYNEX Corp., now merged with Bell Atlantic Corp., was charging $50,000, and Rochester Telephone Co. in upstate New York was charging $10,000.

That SBC even attempted to charge 10 times more than NYNEX, which serves areas with some of the highest rents in the country, is simply absurd, some CLECs charge. Meanwhile, the arbitration-and-appeal process has sapped start-up competitors' coffers, which are much smaller than SBC's.

"None of the Bell companies are easy partners to work with, but SBC is in a class by itself — and it's not because it has class," Lee says.

SBC counters that it was just covering itself. "Our concern with filing tariffs for colocation was that there were too many options and variations in Texas for us to come up with an average price that would fit all competitors," said Selim Bingol, an SBC spokesman at the company's San Antonio, Texas, headquarters. "The bottom line is we are narrowing down the uncertainties now through the arbitration process and will soon end up with tariff-posted rates for colocation."

DSL downer

ISPs have been having their troubles with SBC, as well.

IoNET, Inc. offers Internet services in Oklahoma, an SBC state, and was interested in offering access via digital subcriber line (DSL)

See Stall tactics, page 52

Plenty of blame to go around

While SBC Communications, Inc. often faces charges of putting up legal hurdles to competition, other regional Bell operating companies, as well as GTE Corp., are accused of hampering competition in ways that amount to negligence or incompetence.

BellSouth Corp. has a reputation among some competitive local exchange carriers (CLEC) as being easy to negotiate with but having poor follow-up on implementation. For example, the Bell company incorrectly provisioned trunk lines between one of its own switches and an American Communications Services, Inc. (ACSI) switch, both in downtown Columbus, Ga., according to Bill McKee, ACSI general manager for the area.

Users who switched over to ACSI found they couldn't hear people on the other end of the line on incoming calls. About 150 customers were affected, and ACSI ended up losing 12 business customers, McKee says.

Although the problem was resolved in April, and BellSouth and ACSI say such incidents are less frequent now, McKee fears the damage was done. "In small cities, word of mouth is very strong, and if word gets out that 'ACSI got my service down,' it can make a lasting impression."

But outside of SBC, US WEST, Inc. is probably the biggest lightning rod for criticism. Leonard Conn, president of Internet service provider IoNET, Inc., has had such bad experiences with US WEST in Phoenix that he ditched plans to expand in Arizona.

"It'll be a cold day in hell before I get into another US WEST market," says Conn, his normally calm voice tightening up. "The company is robbing people of business opportunities."

Among Conn's experiences was an episode last January when US WEST fixed a circuit that had been been faulty since May 1996. The repair work was done in about an hour, but the lines linked to the circuit were left down for two and a half days. IoNET had to appeal to US WEST executives out of state and threaten a lawsuit before local technicians turned the lines on again. As a result, IoNET lost about $20,000 because it had to reimburse its customers for the entire month.

"It'll be a cold day in hell before I get into another US WEST market," Conn says.

US WEST officials, like their counterparts at other RBOCs, chalk such problems up to the complexity of opening their networks to competitors.

Making the required changes to the network and operations support systems for billing and ordering throughout US WEST's 14-state region "is an incredibly sophisticated task" that requires "millions of changes in computer instructions," says Jerry Brown, a company spokesman. "It's more complex than putting a probe on Mars."

In general, delays in line provisioning, which CLECs report by the dozens, are the result of demand brought on by the extraordinary growth in the number of ISPs and a lack of adequate forecasting of this expansion, according to Terry Dodd, manager of US WEST interconnection services for Washington. "Manufacturers can't build switches as fast as we need them," he says.

— *Marc Ferranti*

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Continued from page 50

links. But SBC refused to let IoNET test SBC-provided burglar alarm and local-area data service (LADS) circuits, which can support DSL, says Leonard Conn, president of IoNET.

"SBC is not prepared to deliver DSL access to the Internet, so they're making sure no one else can either," Conn says.

When Conn turned to Oklahoma CLECs to get the circuits, he ran into other problems.

Interconnection contracts in general always defined a local loop as copper wire with direct-current continuity, which is required for DSL. But one CLEC, which Conn would not name, said SBC changed the language in one contract at the last moment, without notification, to allow SBC to instead provide lines with subscriber line concentrators (SLIC). SLICs limit line use to voice, preventing use of DSL.

SBC counters that alarm and LADS circuits were never intended to carry high-speed data. Rick King, corporate manager for product development for Southwestern Bell, says SBC is carrying out tests to assess the best way to deliver DSL over its network.

Conn concedes SBC is correct when it says LADS and alarm circuits were not originally intended to support DSL and that tariffs for those circuits do not apply to DSL.

"But SBC is being much more agressive than other RBOCs about yanking the circuits off the market, even for testing purposes, and refusing to come up with tariffs for those circuits that would apply to DSL," he says.

He adds that he can't get SBC to let him use the circuits to test other kinds of high-speed data services.

Picking up the bill

Another charge leveled at SBC, along with other RBOCs, is that it has refused to pay CLECs for calls SBC customers make that terminate at Internet providers that are CLEC customers. Under terms of SBC interconnection agreements, SBC pays a termination charge to a CLEC when an SBC customer calls a CLEC customer and vice versa. This arrangement is called reciprocal compensation.

During negotiations for interconnection agreements, CLECs had argued for a "bill-in-keep" arrangement in which carriers don't have to pay each other for calls terminating into one another's customers.

Ultimately, SBC and the reciprocal compensation arrangement prevailed. But now SBC has unilaterally decided not to apply this principal to calls made to ISPs, saving it millions of dollars in charges it would otherwise have to pay to CLECs throughout its 22-state territory. SBC's stance, according to Bingol, is that calls to ISPs should be considered interexchange calls, which are not subject to the reciprocal compensation agreement.

But if this were true, the ISPs and CLECs say, why wasn't SBC more up front about it in contract negotiations? It's just as likely that SBC misjudged the volume of calls that would go out to ISPs and was late in understanding how alarm and LADs circuits could carry high-speed data, according to Conn and other CLEC officials.

OSS SOS

SBC also faces charges — especially from AT&T and MCI Communications Corp. — that its operations support systems (OSS) can't scale up to handle real competition from CLECs. RBOC OSSes track the services each customer has and the types of services for which different lines are provisioned. CLECs need interfaces into RBOC OSSes to order lines for resale in a timely manner, for example.

"We can't get their OSS to work with ours, and we've had a hell of a time getting them to test it with us," says Chip Casteel, regional executive, public policy, for MCI.

SBC officials dismiss the charges as coming from companies with a vested interest in keeping the RBOCs out of long distance by arguing that there isn't enough competition in the local loop. The long-distance companies are interested only in offering big-ticket services to businesses, SBC says, but they complain to regulators that SBC foot-dragging blocks them from the residential market. In reality, SBC says they have no interest in the less lucrative residential market.

SBC has fulfilled more than 300,000 customer service orders for CLECs in Texas alone, and its OSS is processing about 10,000 orders per month for CLECs reselling SBC lines, Bingol says.

"We're handling customer service requests [from CLECs] and have no backlog," he says. "It's easy for AT&T or MCI to say they would come in and switch over 20,000 customers a day [from SBC] if they were allowed to, but where are they?"

But cries of foul also are being issued by smaller CLECs, without AT&T's huge stake in long distance and thus with nothing to fear should SBC get into long distance. Likewise, the OSS complaints are coming from carriers that are following a facilities-based strategy, such as TCG, and have millions of dollars invested in switches.

Focal Communications Corp., a facilities-

Competition comes to life in Oklahoma

On a hot Tuesday afternoon late last June in Stillwater, Okla., about 100 people gathered in a converted high school gym that serves as the city library to hear Southwestern Bell Corp. square off with Brooks Fiber Properties, Inc. over a town project.

The regional Bell operating company and the upstart competitive local exchange carrier (CLEC), now part of WorldCom, Inc., were pitching competing bids for a fiber-optic data and voice network that would connect a city alliance of schools, medical facilities, municipal buildings and businesses to each other and the Internet.

At stake was a share of the money to be made from usage charges along with $500,000 cash for coming up with the winning plan. But the kicker was a five-year contract to become the city alliance's local telephone company — a job SBC had for some 80 years.

After the competing carriers made their pitches, an official announced the city request for proposal team recommended that Brooks get the job, citing the value such competition would bring.

According to minutes of the meeting, Wayne Petit, an SBC engineer, protested: "I take issue with the fact that competition lowers rates."

"I question if this approach is anticompetitive," added Larry Brown, SBC area manager of external affairs.

Months later, Brown says he believes the playing field was unfairly tilted toward CLECs as a way to entice competition to Stillwater's third-tier market.

But City Manager Carl Weinaug, a chief architect of the alliance plan, says Stillwater would have offered the contract to SBC if its proposal had been better than Brooks'.

"It was clear watching this what the difference was between dealing with the Bell and dealing with the CLEC," Weinaug says. "It was, 'Here's what's good for you,' as opposed to, 'Here's what you asked for, and here's what we can do to help.' "

Further evidence of SBC's heavy-handed tactics came in the form of a letter threatening to "formally proceed with our protest" if Stillwater signed a deal with Brooks. Brown says legal action "is still a possibility."

Weinaug's take on the whole incident: "You say you're for competition, but you really don't know why until you experience something like this."

— Marc Ferranti

Carl Weinaug *learned first-hand the value of competition.*

DOUGLAS HOKE

based start-up in Chicago, is trying to avoid OSS problems by focusing on customers who want new lines. It also is targeting services in Ameritech Corp. territory in Chicago and Bell Atlantic territory in New York. These RBOCs are easier to get interconnection agreements with than US WEST, Inc., SBC or GTE Corp., though their OSSes still need work, says John Barnacle, chief operating officer at Focal.

"We've traded operational difficulties for a much smaller market," Barnacle says. "We're avoiding Dallas, for example . . . so if RBOCs are making it tough and scaring competitors away, in some respects, they've won."

Lots of lobbying

When it comes to lobbying efforts, SBC certainly plays tough.

SBC effectively campaigned for the Texas Public Utility Regulatory Act of 1995 (PURA 95) by tapping more than 80 registered lobbyists and spending millions of dollars promoting the laws, according to Luis Wilmot, a spokesman for the Partnership for a Competitive Texas, a group of long-distance carriers, consumers and businesses. At the time, Wilmot was public counsel at the Texas Office of Public Utility Council, a state consumer advocacy group.

Get more online:

- **Our three-part "Examining the FCC" series, which shows SBC has to share the blame for stunting the growth of competition.**
- **The *Network World* story from July about the SBC lawsuit aimed at declaring parts of the telecom act unconstitutional.**
- **A *Network World* news story from June outlining SBC's threat to sue the FCC over its access charge and universal service decisions.**
- **SBC's own words: Press releases from the carrier's Web site detailing its decision to drop certain lawsuits in Texas and its quest to get portions of the telecom act declared unconstitutional.**

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Perhaps the most controversial PURA 95 stricture was the rule that carriers had to build infrastructure for miles around the area they wanted to service, which would make it much tougher for CLECs to set up shop in any given area.

"Half the gallery in the state Senate was Southwestern Bell people on the day the law passed," recalls Cindy Schonhaut, senior vice president for government affairs at ICG Telecom Group, Inc. "Once it passed, they were all high-fiving each other."

SBC subsequently filed at least two lawsuits related to state PUC decisions that awarded CLECs certificates to offer local services without having to conform to the build-out requirements.

SBC also filed at least seven suits related to PUC decisions that it claimed violated various other provisions of the state laws it had lobbied so hard to see passed.

But in late September, the FCC issued a ruling saying that federal law takes precedence over PURA 95 strictures, including the infrastructure build-out requirement. Several weeks later, SBC dropped the lawsuits that hung mainly on the build-out issue, as well as five out of the remaining seven other suits.

SBC says it dropped the build-out suits to remove an excuse for competitors to say that Texas is not an open market.

"The MCIs, the AT&Ts have no excuse now for not coming in. Let 'em come," says SBC's Bingol, who added that SBC will probably apply for long-distance entry in Texas by year-end.

In the eyes of the CLECs, SBC in June came dangerously close to getting approval to enter long distance in Oklahoma. It cleared the first hurdle when the Oklahoma Corporation Commission, the state PUC, voted 4-1 for SBC.

"Most of the commissioners thought they were close enough to the situation to monitor how competition was progressing, but the staff was mainly against it. They thought it was premature," says an Oklahoma public utilities official who asked not to be named.

Despite inroads Brooks Fiber Properties, Inc. was making into the business market in Oklahoma, "no competitors were really coming out and serving customers in a big way," the official says.

The FCC agreed and denied SBC's application. It said no competitor was offering general business and residential services — Brooks' tests to four employees' homes didn't count.

Despite all the foot-dragging and legal maneuvering, some industry observers are still hopeful competition will come — eventually.

"We're going through a transition period now, trying to get all the kids on the block to play with one another, so there's jostling among the carriers," says Jeffrey Kagan, of Kagan Telecom Associates in Marietta, Ga. "It's going to take some years for the dust to settle, but that's inevitable."

Similarly, unfortunate incidents are likely to happen in a market in the middle of such a profound transition, says Paul Cohen, a Pacific Bell spokesman, referring to the bird-related fiber terminal failure.

WorldCom's Artman says Pacific Bell ultimately handled that incident in a responsible manner, paying some $40,000 for repairs. Let's hope SBC learns a thing or two from its newly acquired partner.

Ferranti is New York bureau chief for the IDG News Service, a wire service that serves more than 270 International Data Group publications worldwide, including Network World.

Anna,
Customer Service
Nothing stops her from helping customers.
Nothing but delays in accessing their files.

MICROSOFT'S VISUAL INTERDEV TOPS THIS ROSTER OF HIGH-END WEB DEVELOPMENT TOOLS.

Power tools for the Web

By Steven M. Cohn

Want a Web site that will survive the onslaught of hits you hope to generate? Then make sure your site-construction tools are professional-strength. Your checklist should include full buzzword compliance, a treasure chest of wizards and prebuilt components, and the ability to get your hands on real code.

We looked at four such tools for creating industrial-strength Web sites. Each has a server-side engine and a fancy integrated development environment (IDE), which allows you to write both browser-based scripts and server-side code.

Our evaluation revealed one clear winner for companies whose standard Web server platform is Windows NT Server running Internet Information Server (IIS). Visual InterDev 1.0 from Microsoft Corp. is a powerful and familiar tool for team development, offering rich features and seamless integration with Visual Studio 97. However, since Visual InterDev's technologies are just starting to migrate to Unix, those of you in a Unix shop will want to take a look at HAHTsite 3.0 from HAHT Software, Inc. Its maturity, scalability and breadth of tools offset its high price tag.

Of the other two products we looked at, Sapphire/Web 4.0 from Bluestone Software, Inc. was in close contention with HAHTsite, while Cold Fusion 3.0 from Allaire Corp. was more of an InterDev look-alike that still has a little growing up to do.

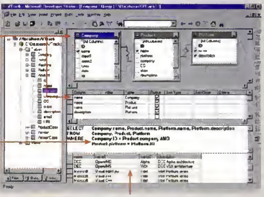
Snapping together applications

Visual InterDev offered the shortest learning curve for reaching a point of real usability, especially if you are already familiar with Visual Basic or other Visual Studio development products. Visual InterDev is a tool for developing Active Server Pages (ASP), which are HTML files containing VBScript or JavaScript.

Visual InterDev includes plenty of wizards for starting different types of projects, themes for designing Web sites and short templates for starting common files. These shortcuts help you build most of an application with little or no coding. Once you begin implementing custom business logic, you can generate HTML code and server-side scripts using design-time controls. The controls create snippets of server-side script that make it easy to produce interactive and fully functional Web pages.

Visual InterDev's Query Designer is one of the most powerful graphical user interface database query builders we've seen (see Figure 1). You may, in fact, want to purchase Visual InterDev for the database tools alone. With native connections to Microsoft SQL Server, Visual InterDev can create, delete or modify tables, fields, triggers and stored procedures.

FIGURE 1



With Visual InterDev's slick integrated database tools, you can use drag-and-drop features in the top two panes to quickly build complicated queries.

The SQL statement is automatically constructed and displayed in the third pane.

You can test this SQL statement and show the results in the bottom pane.

Allaire's Cold Fusion uses a similar model. The Cold Fusion Application Server is built to recognize extensions to HTML called Cold Fusion Markup Language (CFML). CFML files look like normal HTML files but contain extra tags and embedded functions recognized by the Application Server. If you're adventurous, you can use an included C++ API library to create your own custom CFML tags. Cold Fusion also ships with a small, but powerful, set of Java applets that can be accessed through CFML tags.

Last month, Allaire released Cold Fusion Studio, a visual development environment with a high-powered version of Allaire's Homesite HTML editor that supports syntax coloring, integrated preview mode and JavaScript wizards. Its text editor displays context-sensitive tool tips to assist in editing HTML and CFML tags. While you're typing in tags, drop-down lists appear, providing known tag parameters. Cold Fusion Studio has a built-in Query Builder and Database Browser that looks and acts much like those found in Visual InterDev. However, Cold Fusion Studio doesn't have the native database manage-

Score Card

	Project management (20%)	Database tools/connectivity (20%)	Site management/publishing (20%)	Templates and wizards (10%)	Performance/ scalability (10%)	Flexibility and ease of use (10%)	Installation (5%)	Documentation/ Internet support (5%)	Total score
Visual InterDev	9 x .20 = 1.8	10 x .20 = 2.0	8 x .20 = 1.6	7 x .10 = 0.7	7 x .10 = 0.7	8 x .10 = 0.8	6 x .05 = 0.30	8 x .05 = 0.40	8.30
Cold Fusion	5 x .20 = 1.0	8 x .20 = 1.6	7 x .20 = 1.4	8 x .10 = 0.8	6 x .10 = 0.6	7 x .10 = 0.7	7 x .05 = 0.35	7 x .05 = 0.35	6.80
HAHTsite	7 x .20 = 1.4	5 x .20 = 1.0	6 x .20 = 1.2	5 x .10 = 0.5	8 x .10 = 0.8	6 x .10 = 0.6	5 x .05 = 0.25	6 x .05 = 0.30	6.05
Sapphire/Web	6 x .20 = 1.2	6 x .20 = 1.2	4 x .20 = 0.8	6 x .10 = 0.6	7 x .10 = 0.7	6 x .10 = 0.6	7 x .05 = 0.35	7 x .05 = 0.35	5.80

Individual category scores are based on a scale of 1-10. **Percentages** are the weight given each category in determining the total score.

ment capabilities available in Visual InterDev.

Other nice features of Cold Fusion Studio include powerful table and frame wizards, which allow you to build complex structures without knowing many HTML tags, as well as a Document Weight window, which analyzes the size and estimated download time of a document.

Programming in HAHT's HAHTsite involves using a Visual Basic syntax-compatible language called HAHTtalk Basic. When you first create a new project, HAHTsite generates a substantial amount of HAHTtalk code that handles events and database requests from the client. A unique feature of HAHTsite is its integrated server-side debugging capability. You can interactively debug server-side HAHTtalk code in the IDE as an application runs (see Figure 2).

For the client side, HAHTsite has a good built-in WYSIWYG HTML editor that lets you switch between a graphical view and an HTML source view. It also comes with a well-designed image map editor. For HTML pages with frame sets, HAHTsite has a Frames Wizard that can be used to design framed pages at any level of complexity. HAHTsite also has a scripting wizard to assist you with client-side JavaScript or VBScript, but it's not as robust as Visual InterDev's Script Wizard.

Bluestone's Sapphire/Web began its life as a Web development tool based on C and Common Gateway Interface. While maintaining backwards-compatibility, Release 4.0 integrates more current technologies. Rather than trying to compete with the many Java development products on the market, Bluestone wisely decided to focus on gluing the pieces together. It integrates with any available Java compiler and can handle C++ and Java on the server side.

Developing a Sapphire/Web application involves three basic steps. First, you create the HTML pages that make up the project and decide which objects will become activators. An activator is a hyperlink or a form field that activates code on the server. Second, you design the data objects (SQL statements or stored procedures) associated with each activator. Finally, you bind the activators with their respective data objects using the Bind Editor.

At times we found Sapphire/Web's IDE to be a little cumbersome, requiring a fair amount of fine mouse control and lots of clicking. But the whole process is an effective way of programming simple tasks on the server. More detailed code may need to be added depending upon the complexity of your project.

Project management

As you port legacy applications to your intranet, you begin to realize that large Web applications demand a lot of management, organization and coordination.

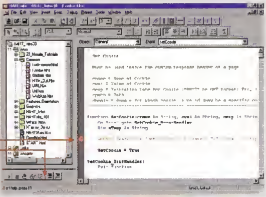
Visual InterDev has an intuitive and flexible project management facility. Its project window resembles the Windows Explorer tree pane. At the root level of this tree resides the user's workspace — a container for projects. You can add multiple projects to a single workspace. Each project represents a single Web application, and each Web application is associated with a directory on a Web site. Although you can have only one workspace open at a time, you can share and move projects among workspaces.

Cold Fusion maintains a simplistic view of all known projects in its project window. This window is divided into three panes: a project list, a folder list for the current project, and a file list for the current folder. However, this universal view of all projects is the only view allowed. You cannot create a new view and you cannot move projects into or out of this view. This can quickly become cumbersome when dealing with large Web sites. Also, we wished Cold Fusion Studio provided a drag-and-drop feature to allow us to move files between folders and projects.

HAHTsite project management facilities are a hybrid of those found in Visual InterDev and Sapphire/Web. This product allows you to open only one project at a time. The project window contains a tree view that is divided into six general folders, including your application files, URL aliases, reusable page objects and data sources. There also is a Widgets folder that comes prepopulated with components that can be shared by all projects. You can extend this library with

FIGURE 2

HAHTsite is the only product reviewed that offers interactive GUI-based server-side debugging.



This full-featured debugger allows you to set break points (the red dot) and scroll line by line using the toolbar.

Joanne, Marketing
Created data warehouse the size of Jupiter. Data feels just as far away.
Michael, Accounting
His timely reporting of cash flow is at the mercy of sluggish data flow.

your own custom widgets.

Sapphire/Web likewise allows you to open only one project at a time and doesn't allow you to create subfolders within a project. But it does give you a slightly deeper view of each project file, including embedded links and database bindings. Sapphire/Web also organizes global objects in a separate window, including database sources, functions and executables that can be shared among all projects.

Publishing

Good site management tools should include at least two functions: publishing and link verification. Publishing is the ability to copy application files from your working directory to a remote production Web server. Link verification tools test the validity of the hyperlinks on your site to ensure the target of each hyperlink exists.

Visual InterDev can publish to the Web server via HTTP. You can choose to copy all files in the project or just those that have changed since the last update. We wish there also was an option to publish only selected files, especially if your test server uses different Open Database Connectivity connections from your production server. You can copy the application to any Web server reachable via HTTP, even through a firewall. You also have the option of using Secure Sockets Layer (SSL) to encrypt files if you want to transmit them across an unsecured network.

Cold Fusion Studio has two methods of interacting with remote information: HTTP or File Transfer Protocol. You can connect directly to a remote Cold Fusion Application Server via HTTP, optionally with SSL, and manage a remote directory as if it were local to the IDE. For projects created locally and managed by the Studio Project window, you can publish to a remote FTP server. This method gives you the option of copying all files or just those that have changed since the last publication. Since you can't publish a project via HTTP, the remote FTP server must be configured to overlap the directory structure on the Web server.

HAHTsite's publishing capabilities are similar to those of Visual InterDev. HAHTsite rebuilds out-of-date pieces of your project using an internal procedure similar to the Unix make command. It then interrogates every part of your project, reporting on missing links and invalid bindings. Finally, it publishes your project to the selected server by either direct file copy or FTP. You can choose to publish your entire project, only the files that have changed or only selected files. Unfortunately, HAHTsite doesn't have the option to publish with HTTP, making it impossible to publish through a firewall unless that firewall allows FTP to the server.

Sapphire/Web allows you to configure each project with a test directory and a release directory. While developing your project, files are saved in the test directory. You then use a one-button publishing function to deploy files to the release directory. Unfortunately, directories are limited to those locally accessible on the development machine. You need to manually transfer files via FTP or develop scripts to automate copying your project files to remote production Web servers.

Link verification

Visual InterDev has a simple graphical link verification tool called Link View. Link View can be used to interactively verify all links within any open project. You also can use it to view the structure of any site on the Web simply by supplying a complete URL. Disjointed red lines identify broken links. Filtering options allow you to show or hide different Web site components, such as graphics and executables, thereby simplifying the view for large sites.

Cold Fusion Studio can verify the links on a single page or all links in a project. Its Link Checker tool lists the links on each page and marks each as either good or bad using appropriate icons. The Link Checker does not show a graphical map of the Web project, but it is an easy way of validating the connections between pages.

HAHTsite allows you to right-click on any document in the project window and open a window showing all references to and from the document. You also can show a global view of the entire project.

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- **Sidebars on our experiences installing each product, a look at each company's future directions and a discussion of server-side extensions.**
- **A conversion utility that will update your Internet Database Connector pages to Active Server Pages.**

www.nwfusion.com

However, this link view does not show invalid or unresolved links. We assume the reason for this is that all links are checked during publishing, but it would be nice to be able to view broken links during design time as well.

Sapphire/Web expands upon its project viewer with a Project Mapper window, a graphical utility similar to Visual InterDev's Link View. It shows valid and invalid links and renders detailed views of bindings between activators and data sources.

This turned out to be a useful means of understanding the structure of unfamiliar projects. By right-clicking on an object in the Project Mapper, you have immediate access to related object editors, such as the Object Bind Editor.

Summary

Microsoft is pushing Windows developers to take advantage of its object-oriented component technologies using Visual Studio as a comprehensive arsenal. The company has tightly positioned Visual InterDev as yet another weapon in the war against the onslaught of requests for Web applications. Among the tools reviewed here, which have much in common, it stands out as best overall.

Cohn is manager of Internet development at The Boston Globe *in Boston, Mass., and an instructor in Northeastern University's State of the Art Program. He can be reached at cohn@globe.com.*

Net Results

	PRICE	PROS	CONS
Visual InterDev 1.0 *Microsoft Corp.* *(206) 882-8080* Winner	From $199 for owners of other Microsoft developer tools to $499 for full product	▲ Superb database tools ▲ Short learning curve ▲ Seamless integration with Visual Studio, SQL Server ▲ Published to many flavors of Unix as well as NT using HTTP ▲ Least expensive	▼ ASP only works with IIS 3.0+, O'Reilly's WebSite 2.0 or ChiliSoft plug-in
Cold Fusion 3.1 *Allaire Corp.* *(617) 761-2000*	$295 for Studio, $995 for Server with optional yearly subscription fee of $395	▲ Rapid prototyping ▲ Dynamic Java forms ▲ LDAP support ▲ Integrated with Verity ▲ Remote HTTP editing ▲ Integrated HTML Validator	▼ No native database support ▼ Limited project management capabilities ▼ Minor bugs in new IDE
HAHTsite 3.0 *HAHT Software, Inc.* *(888) 439-4248*	$1,995 for IDE. From $4,995 for NT App Server to $9,995 for Unix Distributed App Server.	▲ Full Java support ▲ Scalable Distributed Application Server with cross-platform server clustering	▼ Weak database tools ▼ Most expensive
Sapphire/Web 4.0 *Bluestone Software, Inc.* *(609) 727-4600*	$4,995 per developer seat. No run-time fees.	▲ Offers most platforms ▲ 100% Pure Java compatibility ▲ Persistent database connections ▲ Widest native database support	▼ Poor project management ▼ No remote deployment capabilities ▼ Moderately expensive

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Lorenzo,
Sales Management
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REVIEW

FULL OF ADDITIONS AND IMPROVEMENTS, THIS WEB SERVER BRINGS MICROSOFT PROMINENCE IN YET ANOTHER MARKET.

Microsoft reaches new plateau with IIS 4.0

By Joel Snyder

Microsoft Corp. will change the landscape in the Web server market when its Internet Information Server (IIS) 4.0 hits the streets this month. With at least 50 new or enhanced features, IIS 4.0 positions Microsoft to join the likes of Netscape Communications Corp. and O'Reilly & Associates, Inc. at the high end of the market.

Go online for more information from Microsoft about IIS 4.0.

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We're not talking tweaks or incremental improvements here. The vast majority of what's new — especially in the areas of administration, programming and security — is the result of a massive amount of development.

However, a closer inspection uncovers a few rough spots and some potential disasters-in-waiting. Microsoft has yet to fully address performance problems or fix bugs that caused us a rash of difficulties. Our 200-MHz Pentium-based server with 64M bytes of RAM was overwhelmed by IIS 4.0 and all its associated tools. We also found a number of problem areas: poor standards compliance in a Simple Mail Transfer Protocol (SMTP) server, infinite loops in a Web application debugger and unfinished documentation.

The first thing you'll notice about IIS 4.0 is that it's now included in an NT Server Option Pack that also includes Service Pack 3 for NT 4.0 and other goodies.

The benefit of this packaging is a simpler installation procedure. Instead of fumbling for various disks, as was required when IIS was incorporated into the NT Server operating system, you can run the Option Pack setup program once and install everything. Alternatively, an Install Wizard enables you to load only those pieces of IIS and the other options you need.

Microsoft also has stuffed IIS with a number of new components. Chief among them are an index server for building full-text Web site indexes, a log analyzer, a site mapper and even low-end SMTP and Network News Transfer Protocol servers.

You'll get three administration console options as well: Microsoft Management Console, which is an NT application; an HTML-based interface for managing IIS from Internet Explorer; and a documented set of OLE interfaces to the administrative facilities, which lets you build custom management tools.

Another big change is the ability for a single IIS server to handle multiple Web sites, each of which can be a separate manageable entity. While this feature isn't new in the industry, it illustrates that Microsoft now has the features required at the market's high end. Multisite support enables system administrators to define an operator for each site. Those operators then can change parts of their sites, such as default page names, without affecting other sites on the same server.

Coupled with the multisite support is a bandwidth throttle feature that helps keep network utilization within a site operator's limits. Furthermore, sites can be tied to their own IP addresses in a hardware-based multihoming configuration or share an IP address in a software-based multihoming setup, which Microsoft now calls host header support.

Program friendly

Programmers will like that IIS' HTML page preprocessor, called Active Server Pages, now has an application debugger. The debugger employs a virtual console that enables programmers to view Web applications as they execute, stop them when they see problems and see whether their corrections work.

The new IIS also enables Web applications to run in their own processes instead of as part of the main Web server process, which offers protection from runaway applications that can bring down the Web server. Thanks to this new feature, only the runaway application that has grabbed too much memory or CPU time will crash, as opposed to the entire Web server.

Programmers also get to cut their teeth on developing Web applications using Microsoft Transaction Server, which is included in the Option Pack.

Microsoft has done a lot with security too, although weak spots remain. For instance, IIS still is tied too firmly to Windows NT's authentication and authorization database.

On the plus side, IIS now includes a full-scale certificate server, which enables you to create and assign certificates to end users of Web applications.

Better documentation

IIS also addresses a common complaint about Microsoft products: documentation that's generally disorganized and hard to find.

All the documentation for IIS 4.0 — including the software developer's kit — is loaded directly into IIS in HTML format with some multimedia presentations. With other Microsoft products, the documentation may be on a separate CD-ROM, on Microsoft's Web site or elsewhere. More importantly, IIS uses its built-in index server to support full-text searching of documentation.

The documentation content is better, although it still lacks depth. For example, we used a help file to set up support for Secure Sockets Layer services. While the file gave us the correct step-by-step instructions for pulling down menus and typing in values, it never explained what IIS was going to do with the information, where it was going to be stored or why we had to enter it in the first place.

Strong to a fault

If IIS 4.0 has a fault, it may be in its size. The product is firmly aimed at high-end and large-scale Web sites. With so many new and enhanced options, it's going to take you and your staff quite some time to get comfortable enough with IIS 4.0 to base advanced Web site services on it.

This means you shouldn't rush to put IIS 4.0 into production. Rather, just start experimenting with it. The framework Microsoft has built for IIS is tremendous. If the company finishes the detail work, cleans up the bugs and jazzes up performance, IIS 4.0 could blow the socks off the competition in the high-end Web server market.

Snyder is a senior partner at Opus One in Tucson, Ariz., where he specializes in networks and communications systems. He can be reached via e-mail at jms@opus1.com.

Net Results

Internet Information Server 4.0

Microsoft Corp.
www.microsoft.com/iis/beta/default.asp

Price: Included in the cost of Windows NT Server 4.0

PROS
- ▲ Catapults IIS into the enterprise Web server market
- ▲ High-end management interface with multiple console options
- ▲ Improved installation and programming interface

CONS
- ▼ Will take time to digest all the new and improved features and options, potentially holding back production deployment
- ▼ Still has some performance problems and bugs

Score Card

Setup (30%)	9 x .30 = 2.7
Monitoring (20%)	8 x .20 = 1.6
Programmer aids (20%)	8 x .20 = 1.6
Database (10%)	9 x .10 = 0.9
Security (10%)	7 x .10 = 0.7
Documentation (10%)	6 x .10 = 0.6
Overall score	8.1

Individual category scores are based on a scale of 1–10. **Percentages** are the weight given each category in determining the **total score.**

Use the 'show-me' interview

Ditch your tired old job interview questions and ask candidates to demonstrate their problem-solving skills on the spot.

By Loretta Prencipe

These interview questions probably sound familiar: What are your strengths and weaknesses? Why did you leave your last job? How do you respond to criticism? What can you tell me about yourself?

No doubt you've been asked some of these old standbys and have fired them off to a few job candidates yourself. But how much do they tell you about the applicants? Can they do the job? Are they ahead of the curve? Do they give you more to go on than just your gut feeling?

If you're having trouble finding the right person to fill a position, your interviewing style may be to blame.

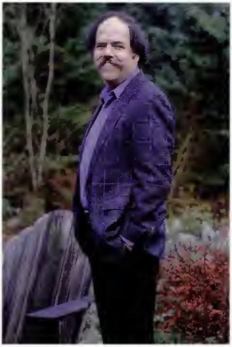
Rework your questions

The traditional interview is all about "mutual seduction," says Kenneth Nowack, a consultant at Performance Dimensions, a Santa Monica, Calif., firm that specializes in employee selection. Most managers tend to stay in their comfort zone and ask one or two favorite questions, Nowack says. The rest of the time the interviewer is selling the company and the candidate is selling himself. Obviously, this isn't the most productive use of time.

What's more, traditional interviews overemphasize an applicant's history, says John Sullivan, professor and human resources program coordinator at San Francisco State University and founder of the California Strategic Human Resources Partnership, a consortium of 31 Fortune 500 HR executives. "High-tech skills from three years ago have no value," he says. Instead of stressing the past, he suggests asking how the candidate can use those skills in the future.

Talk shop, advises Don Briggs, network manager at Raymond Karsan Associates, a human resources services provider in Woburn, Mass. Shop talk gives Briggs a good idea of the candidate's level of technical expertise and communication skills — more so than a traditional interview would. "I leave the traditional interview questions to someone else," Briggs says.

Robert Gately, president of Gately Consulting, of Hopedale, Mass., says that strategy is sound, given that a traditional interview gives you only a superficial view of a job candidate. "The success rate in hiring based on an interview alone is very low and only slightly better than flipping a coin," he says.


KATHLEEN KING

Michael Schuyler *takes the "show-me" interview approach and surprises candidates with his own favorite questions.*

Nowack advises managers to take a "show-me" attitude and give prospective employees a sample work test. Instead of asking the candidates what networks they last designed, have them do a simulation in front of you, he says.

Briggs prefers an oral test. "If [you give a] written test, you can't give them feedback," he says. "Orally, it becomes an interactive process, and I can see the steps they went through to solve the problem."

He says some candidates can pass certification tests and still be ineffective, spending too much time on problems that have easy answers in the real world. Asking candidates to solve a problem aloud on the spot will help you better determine whether they are up to snuff.

Michael Schuyler, chief of support services at Kitsap Regional Library, of Bremerton, Wash., also likes the show-me approach and has come up with his own favorite questions.

One example is this: "The air-conditioning has gone off, and once the temperature reaches 88 degrees, the big red switch is going to shut off all the electricity. There are 300 people online, and all the computer support staff except you are in Las Vegas. Or Reno, I forget which. The phones start ringing. What do you do?"

The correct answer? Put the phones on hold.

Run the sample problems and other tests by your best technical performers before the interview, advises Sullivan. You should be able to recognize a great, good and bad answer before you ask the question, he says.

Update your style

Nowack recommends following a four-step approach to designing sample problems and interview questions.

Step 1: List the actual job requirements and take a futurist view. Ask yourself, "What will my folks need tomorrow?" This exercise forces you to decide what you are really looking for, what the job entails and what the future looks like for your department.

Step 2: Develop interview questions and sample problems. What skills or skill sets does your future employee need to meet the job requirements? These questions should require the candidate to answer questions using specific details. The questions and sample problems should relate to situations that could arise in your department or that actually did arise. To assess stress tolerance, you might ask candidates to describe a work problem that caused stress. How did they cope, and what was the outcome?

Step 3: Define what good performance looks like in the future employee. What actions, behaviors and approaches differentiate poor, moderate and good performance in a particular area? This is the "fit issue." This step often defines the culture, environment and soft people skills you're looking for.

Step 4: It may sound simplistic, but make sure you consistently administer these questions and problems to all candidates. This allows you to compare each applicant from the same vantage point.

As imperfect as an interview is for ferreting out the right person for the job, Nowack concedes it's still the best means available. Just remember to look at it realistically.

Interviews really are better predictors of who won't succeed than of who will, he says.

Prencipe is an attorney in Springfield, Va., who prefers the gentler art of freelance writing about legal and employment topics. She can be reached at LWPrencipe@aol.com.

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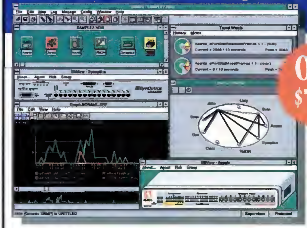

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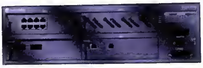

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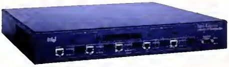

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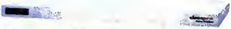

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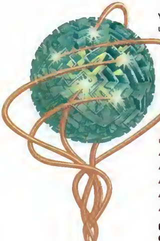

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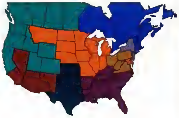

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NIH

Continued from page 1

reduce hardware expenses and let the institute's 20,000 employees communicate more easily.

But NIH's VLAN plans were undermined when its new Cabletron Systems, Inc. switches and software couldn't handle the institute's relatively high volume of AppleTalk traffic. The problem does not reside with Cabletron alone though, because AppleTalk in a VLAN generally is a bear to configure, according to NIH and other users. The nearly continual stream of broadcasts it sends out to poll for printers and servers confuses everything, NIH engineers soon discovered.

When the Division of Computer Technology and Research (DCRT), which is charged with upgrading the institute's NIHnet network, on Nov. 20 set up a VLAN in Building 49 using Cabletron hardware and software, all went well — for a while.

THE NATIONAL INSTITUTES OF HEALTH

Network Infrastructure:

- NIHnet connects 24 NIH institutes, centers and divisions
- Includes about 100 routers in 60 locations
- More than half of the 14 LANs on NIHnet use AppleTalk
- The LANs also support TCP/IP, IPX and DECnet
- About 90% of NIHnet LANs are Ethernet

Mike Stoos and Jim Brunetti, two of the top electronic engineers for the Network Systems Branch (NSB) of the DCRT, knew to migrate the building's 1,400 users slowly. The first few users migrated perfectly to a VLAN anchored with Cabletron's SecureFast VLAN Manager and SmartSwitch 6000s. The network hummed through the Thanksgiving weekend with nary a glitch.

The glitch

Then, last Monday morning, the engineers migrated more users. That's when the network blew. "It looked like it was going well," said Brunetti, a nine-year veteran of the DCRT. Then things stopped working.

Making matters worse, people who had not been moved to the VLAN started complaining about their network connections.

Since about 50% of the computers in the building speak AppleTalk, it was imperative to get the Cabletron hardware and software operating smoothly as quickly as possible.

"Our sales rep walked in at 11 a.m. on Monday and the network was down with some AppleTalk issues," said Trent Waterhouse, program manager for SecureFast VLAN Manager, the management software that is supposed to make VLAN networking as easy as plug-and-play.

Cabletron, which has worked with NIH for over six years, quickly shipped $250,000 worth of loaner hardware and sent a staff of engineers to create a parallel network in Building 49.

"We just backed everybody off right after the holiday weekend, and moved over to the parallel network by Wednesday," Brunetti said. The NSB engineers, meanwhile, were looking for the problem on their end. They took a closer look at their network wiring. What they found shocked them.

Brunetti and Stoos found that, over the years, people had put in their own hubs, their own switches and their own wires. It was such a mess they took pictures to record the event.

For its part, Cabletron was looking at its SecureFast software and trying to determine if that was the problem. "Version 1.6 of SecureFast is beta software from us, and it's our understanding that was what was installed at NIH," Waterhouse said.

"If the customer had chosen to install [the existing software,] Version 1.5.3, it should have successfully run in the network if properly configured for AppleTalk," he said, adding there may have been a misconfiguration in the firmware.

Under SecureFast 1.5.3, AppleTalk must be configured manually, in two steps, to run on the VLAN. SecureFast 1.6 is supposed to address this issue and automatically configure itself for all protocols. But Version 1.6 is in the last releases of beta and may not have all the bugs worked out.

Other users have seen this issue before. "The SmartSwitch 6000s won't run AppleTalk under 1.5," said James Wiedel, network manager at the University of Southern California in Los Angeles. "We knew [the SmartSwitch 6000s] wouldn't run AppleTalk until SecureFast Version 1.6," Wiedel said. He successfully set up his VLAN about two weeks ago with the new software release.

"We worked quite a bit with [Cabletron] getting AppleTalk working in the first place," Wiedel said. "The main problem is not in the AppleTalk [support in the Cabletron box]. You have to clean up your net and get some of the crazy things out of there."

The Rhode Island School of Design runs about 80% AppleTalk. "AppleTalk is my nightmare," said Steve Boudreau, the school's network manager. Boudreau began installing one of four Cabletron-based VLANs in late August and worked with both versions of SecureFast before getting it all up and running. Version 1.6 handles AppleTalk much better than Version 1.5.3, according to Boudreau.

At the NIH, the team still was working on the problem late last week. The team initially loaded SecureFast Release 1.5.3. As of Friday, NIH had not decided when to upgrade to Version 1.6.

"We have a two-year software maintenance agreement," Brunetti said.

And at this point, the team is in no hurry to try anything new until they are sure they understand the problem. "We recognize the benefits of VLAN," he said. Also, with the conglomeration of LANs, WANs, buildings and the multitude of protocols and hardware, "we don't have a choice," he added.

As for Cabletron, engineers at NIH could not be more pleased. "Cabletron is being very supportive and being a stand-up company," said Harold Ostrow, head of the NSB. "We're trying to [link the 6000s] with some very old equipment." ■

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Pegasus

Continued from page 1

filtering out messages from the spam generators listed by the CIAC.

A number did just that, causing countless legitimate e-mail messages sent by Pegasus users (Harris claims a base of six million worldwide) to be bounced back to their senders like common spam, or worse, discarded altogether.

After Harris complained, CIAC quickly issued a retraction and posted an updated antispam bulletin on Nov. 25, but the initial accusation had already spread through the 'Net like a nasty macro virus.

"I am a longtime user of Pegasus Mail, and I can tell you that the Pegasus listserv was inundated with comments [showing] that the entire user community was extremely upset by the mischaracterization," said Steven Handleman, director of computer services for a money management firm near Philadelphia. "This resulted in serious inconvenience for users."

Not to mention utter turmoil for Harris and his colleagues.

"We were put into a situation where for nearly 10 days we had to devote practically our entire efforts to firefighting the situation — dealing with ISPs, reassuring users [and] producing an amended version [of Pegasus Mail] that is immune to indiscriminate filtering," Harris said.

The real damage, however, was to their product's reputation, he added.

"The most significant problem for us was a short-term panic amongst our users," he said. "We know for a fact that some Pegasus Mail users stopped using the product out of fear that their mail would be rejected."

The fact that it was Pegasus being so victimized was cruelly ironic, according to one e-mail expert."[The error] was a tragedy because of all the mail clients; Pegasus Mail is the *only* one that is actively trying to prevent itself from being used in spam," said Paul Hoffman, director of the Internet Mail Consortium. In addition to an antispam clause in its licensing agreement, Pegasus automatically generates a nonstandard header for bulk mailings that recipients can filter on if they so choose.

Not guilty as charged

This updated list from a CIAC bulletin originally and erroneously included Pegasus Mail:

"Some of the more popular Mail User Agents with spammers are: Floodgate, Extractor, Fusion, Masse-mail, Quick Shot, NetMailer, WorldMerg, Aristotle Mail, Emailer Platinum, Master Mailer and Calypso."

Now that the storm has passed for Pegasus Mail, those involved in the episode can appreciate a few of the lessons learned.

"If I knew a month and a half ago what I know today, Pegasus definitely would not have been in [the bulletin]," said Phil Cox, the CIAC staff member who wrote the bulletin. "We've learned that we need to take extra care."

According to Hoffman and Harris, the larger issues revolve around the risk/reward ratio of filtering and the general ineffectiveness of current antispam measures. "The whole problem with filtering is that you lose things that you don't want to lose," Hoffman said. "Some people are willing to lose a lot of mail, but I don't think that's a really good idea."

Harris believes a more drastic measure is needed: an outright ban on spam. "I believe strongly that spam cannot be regulated or controlled while it is still a legal practice," he said. "As we can easily see from the rapid growth of specialized bulk-mail packages, the smell of rotting meat will always attract the flies." ■

Filter at your own risk

Slapping an antispam filter on your e-mail server can be risky business because you won't know what you aren't getting, preached Paul Hoffman, director of the Internet Mail Consortium. He cited a personal experience as tell-tale:

Hoffman recently received an unsolicited commercial e-mail message offering him an opportunity to beta test an antispam filter from a company he preferred not to name. He was not interested, but had he been a potential paying customer, the vendor would never have known.

Internet Mail Consortium's ***Hoffman***

"My [return] message got bounced by their filter as being potential spam," Hoffman said.

Why might that have happened?

"I don't know, and I don't care," he chuckled. "But it shows that their filter can lose important business mail, which this was.'

—Paul McNamara

Intel

Continued from page 1

box and store of local applications and data.

The most striking part of the guidelines is that Microsoft Corp.'s Windows is simply one operating system option that can be selected by manufacturers and their customers.

Intel-authored drafts already have been seen by operating system and hardware vendors, including Microsoft, IBM, Citrix Systems, Inc., Novell, Inc., Compaq Computer Corp., Hewlett-Packard Co., NEC Corp. and Wyse Technology, Inc.

A final version of the documents, one for lean clients and one for network servers, will be ready by April, according to Mitch Shults, director of server platform marketing for Intel's Enterprise Server Products group. "We expect to see lean client products based on these documents and designs in 1998," he said.

The client document describes the basic elements of a lean client device: no hard drive, a 100-MHz Intel Pentium microprocessor, a range of memory recommendations depending on the device's purpose, and an array of management features and APIs in software and firmware.

The existing generation of servers, with some additional management software, generally satisfies the draft server document, Shults said.

As a result, the document will focus mainly on giving computer builders details on how to configure their servers with a specific lean-client software stack, such as that from Network Computer, Inc., (NCI) the Oracle Corp. subsidiary that develops and sells client and server software for Java-based NC systems. NCI will port its NC Desktop and NC Server Suite software packages, which use a small Unix kernel, to the Intel-based systems.

The exact relationship between lean clients and servers will depend on what kind of lean client a manufacturer builds from the Intel guidelines. NCI's software, for example, is aimed at an NC product that downloads and runs Java applications, occasionally accessing a server for a special application or for file services. But a Windows terminal type of lean client will interact continuously with the server, where all the application processing is handled.

Whatever the arrangement, Intel wants the processor piece of it. "Intel is explicitly recognizing the existence and legitimacy of the lean clients," Shults said. "We're doing engineering work and marketing [to support them]. This is a new and incremental market that previously was served by [alphanumeric] terminals." ■

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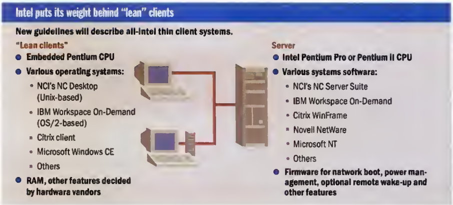
Intel puts its weight behind "lean" clients

New guidelines will describe all-Intel thin client systems.



"Lean clients"
Embedded Pentium CPU
Various operating systems:
NCI's NC Desktop (Unix-based)
IBM Workspace On-Demand (OS/2-based)
Citrix client
Microsoft Windows CE
Others
RAM, other features decided by hardware vendors
Server
Intel Pentium Pro or Pentium II CPU
Various systems software:
NCI's NC Server Suite
IBM Workspace On-Demand
Citrix WinFrame
Novell NetWare
Microsoft NT
Others
Firmware for network boot, power management, optional remote wake-up and other features

Sun

Continued from page 1

criticism from analysts and developers while testing the patience of partners allied with Sun against Microsoft Corp. It also has given Microsoft a chance to sow confusion with its own Java implementation.

"IT managers are starting to lose faith a little bit because they're just not seeing the results," said analyst John Biasi of Hurwitz Group, Inc., of Framingham, Mass.

Hoping to ease such concerns, JavaSoft this week will unveil a new roadmap for its Java Development Kit (JDK) 1.2 that developers and company officials hope will better reflect reality.

JDK 1.2, a package of programming tools for creating Java applications, was supposed to ship last summer, but it is now slated for release at the end of the second quarter in 1998. A developer version is due out this month. It will feature additional Java Foundation Classes (JFC) — blocks of prebuilt code that help developers build applications — and enhanced security, JavaSoft officials said.

Sun also plans several other announcements, including:

- An add-on to its Solstice Enterprise Manager 2.1 that provides a set of Java APIs allowing developers to create applications that can be integrated with Telecommunications Management Network applications.
- A Java Dynamic Management Kit designed to allow developers to program Java agents that can detect and in some cases fix network problems.
- The Sun Bandwidth Allocator 1.0, a traffic flow and monitoring product with a Java remote interface.

JavaSoft also reportedly will announce the release of a specification for Enterprise JavaBeans (EJB), sources said.

The long-awaited EJB is supposed to enable developers to use JavaBean components to build complex server-side applications. But like many of Sun's products, it has fallen far behind the roadmap schedule (see graphic, page 1).

The EJB specification originally was due out last summer, with the software set to ship by year-end.

Other key products that have been significantly delayed include the Java Server Toolkit and HotSpot, a technology that JavaSoft says will double the performance of Java applications.

HotSpot was set to ship this month. However, only a limited developer edition has appeared, with the commercial release now pushed back to next spring.

One analyst said JavaSoft — whose work force has more than doubled since January — was not prepared to meet its own deadlines for enterprise Java products. "They were trying to define a full enterprise platform in six months, and it was totally unreasonable to think they could actually accomplish it," said Anne Thomas, an analyst with the Patricia Seybold Group, Inc., of Boston.

Even ardent supporters of Sun's Java initiative say the delays cause problems. "Our ability to schedule and deliver our own products is directly dependent on their ability to do the same," said Rick Ross, founder of the Java Developers Lobby. ■

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What does the 'lean client' mean?

What did Intel [Corp.] announce?

The chip maker said it is drafting design guidelines to help computer makers and operating system vendors build a new breed of client devices — thin, or as Intel dubbed them, lean clients — instead of traditional Windows [PCs]. And to build the servers these clients depend on.

Is there any difference between thin and lean clients?

No.

What is the relationship between lean clients and servers?

It will depend on what kind of lean client it is. A Java network computer built from the Intel guidelines will use the server only occasionally because it downloads and runs Java applications locally. But a Windows terminal type of thin client, which also can be built from the Intel documents, is continuously interacting with the server, because the server handles all the processing.

Where does Microsoft [Corp.] fit into this Intel lean client?

That is unclear at the moment, which is a pretty remarkable situation when you think about it. Microsoft reportedly is creating a version of Windows CE 2.0, a Windows-compatible, embedded operating system originally designed for handheld devices, to support the Intel lean-client guidelines. But you will be able to create an entire thin-client installation without a shred of Microsoft code.

Intel and Microsoft a year ago launched the NetPC specification, and NetPC products are just now hitting the market. How do they fit in?

Intel says its guidelines cover all types of lean clients, including the NetPC. But that is stretching the point. Remember, the NetPC uses a server to download the Windows operating system and the user's files and applications. At the end of the download, you end up with a full Windows PC.

— John Cox

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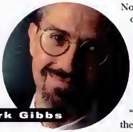
Backspin

IntranetWare sinks. Will Schmidt walk the plank?

Ah, me hearties, Cap'n Gibbs back again. So brace the mainsail, scupper the poop deck and avast behind (nothin' personal you understand).

Well, it's quite interestin' out here on the Sea of Networking. Take Admiral Schimdt at the helm of the good ship Novell: He announced at Comdex that his company is dropping the IntranetWare pennant and going back to hoisting the NetWare flag.

As they be sayin' in certain far-off lands, "Duh."


Mark Gibbs

IntraNetWare, launched in September last year, was a profoundly dumb marketing exercise by any standard. It displayed a deep lack of understanding about the purpose and nature of intranets — intranets are a way of working, not a collection of infrastructure services.

I can just imagine what the Novell executive marketing meetings were like back in early 1996 . . .

Exec-1: What's all this intranet stuff?

Exec-2: I'm not sure, but it sounds really big. We should do something.

Exec-1: Hey, intranet has got "net" in it . . . what if we repackage NetWare? We can call it IntranetWare.

Exec-2: Cool. Where shall we go for lunch?

Novell's "about-face" is, I think, incredibly embarrassing.

If you've read this column for any length of time you'll be aware that I once worked for Novell, and I much admire its products and technologies. But Novell has a number of problems in its approach to business.

Consider the applications market. Novell tried to attack this market from the development side with tools such as AppWare and from the product side with WordPerfect. Both ventures failed because Novell wasn't committed to making either a success.

Why was there no commitment? Because Novell suffers from terminal NIH (Not Invented Here) Syndrome, which prevents new business initiatives from maturing. It also prevents Novell from responding to market trends in a timely fashion. For example, Moab, the next version of NetWare that will run over TCP/IP or IPX, will be available early next year. Isn't this just a little late?

Then there's NetWare Directory Service for NT. The beta's getting rave reviews, but it is so late that Microsoft has had time to make noise about Active Directory and dilute Novell's pitch. Plain dumb.

There's also the problem of Novell not completing products. I don't mean that the products don't work. Rather, their products often go to market "unpolished." Consider the NetWare Web Server. A fine piece of engineering that is one of the fastest Web servers around. But did Novell provide sample back-end applications? No. Dumb move.

This sloppiness is endemic in Novell's operations. Just look at Novell's "death by patches" situation. You need to be an expert on its patches to know what you need to patch. It shouldn't be that hard! Dumb, dumb, dumb. But I digress . . .

So what's going to happen with Novell? Well, Mr. Schmidt is lauded as a visionary. He is credited with architecting Sun's Internet strategy and being instrumental in promoting Java. But since taking the helm at Novell last April, Schmidt doesn't seem to have been able to make any major changes. Do you see a vision? Do you see a strategy?

Well, Admiral Schmidt, them thar seas are getting very rough. The good ship Novell is starting to flounder and your Comdex address, which I thought was weak, showed damn little vision and lots of platitudes.

Novell needs some real vision now. Unless you get the sales up, you'll find Novell taking on water and yourself walking the plank. I give you no more than six months at the current rate. What next Admiral?

Will Admiral Schmidt find a new course? Predictions to nwcolumn@gibbs.com or leave a message for Cap'n Gibbs at (800) 622-1108, Ext. 7504.

'NET BUZZ

The latest on the Internet/Intranet Industry

By Chris Nerney

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DEJA NEWS LANDS $10 MILLION SECOND-ROUND VENTURE Newsgroup search and discussion forum leader **Deja News, Inc.** has secured a $10 million second round of financing from three investors.

The new infusion of cash brings the Austin, Texas-based company's total investment capital to $14.5 million.

Leading the latest round was **Internet Capital Group,** which kicked in $7 million. Original investors **Austin Ventures** and **Prime New Ventures** covered the rest.

Founded in May 1995, Deja News occupies a unique space in the Web market. While there is tremendous competition among vendors to provide powerful and comprehensive search engines for the Internet, Deja News has no real contenders in the newsgroup search market. For example, the **Alta Vista** site offers newsgroup searches, but lacks the ability to organize results as well as Deja News, which estimates traffic for its www.dejanews.com Web site at 3.5 million users per month.

The company also has begun offering free archival services for discussion forums hosted by businesses and educational institutions. So far, the University of California at Berkeley and Macromedia, Inc. have signed on.

MICROSOFT'S JAVA SUMMIT BAILOUT For a while it looked as if the lowly Java developer would get the royal treatment from **Microsoft Corp.,** which routinely rolls out the red carpet for corporate executives whose business it desires.

The software giant had invited about 100 Java developers and Microsoft customers to the Redmond campus for an all-expenses-paid Java Summit scheduled for this past Friday and Saturday.

However, underwhelmed by the response, Microsoft began rescinding the invitations last week, claiming that holiday schedules and this week's **Fall Internet World '97** trade show were causing too many invitees to decline.

Of course, the holidays and the trade show have been scheduled for a while now, so we have no idea why the company chose last weekend for **Bill Gates'** arm-twisting session.

Microsoft said it scheduled the meeting to "set the record straight" on how Java fits into its plans. Perhaps company executives need some extra time to figure out the record for themselves.

Act now and send 'Net Buzz your best Internet- and intranet-related news and we'll send you a special Gartner Group report, "(Your Market Here) Will Be a $5 Billion Market by the Year 2000." Contact Chris Nerney at (508) 820-7451 or cnerney@nww.com.

sen

Brian Reid, director of
Digital's Network Systems Laboratory,
which keeps tabs on Internet growth.

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try

"When I first started talking about firewalls," says DIGITAL's Dr. Brian Reid, "people thought I was referring to things made of bricks and mortar, not computer code. We built the first Internet firewall for ourselves in '83, so we could connect our network to the Internet safely. Recently, a DIGITAL team packaged our company's considerable security expertise into AltaVista™ Firewall. It's the first active firewall product on the open market, in that it continually looks for threats and instantly responds to attack." Easy to install and use, AltaVista Firewall and Tunnel products are part of the reason businesses from aerospace to finance, energy to pharmaceuticals, trust DIGITAL as their Internet partner. We offer complete Web-based solutions, plus skilled people in over 100 countries, to help you put it all together, and keep it together. Find us at www.digital.com/sentry, or call 1-800-DIGITAL. And get ready to win in a networked world.

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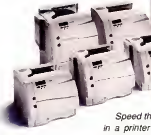

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